

Chymia

SCIENCE AND NATURE IN MEDIEVAL
AND EARLY MODERN EUROPE

Edited by

Miguel López-Pérez, Didier Kahn and Mar Rey-Bueno

Turba Philosophorum.



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and Early Modern Europe

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P U B L I S H I N G

Chymia: Science and Nature in Medieval and Early Modern Europe
Edited by Miguel López Pérez, Didier Kahn and Mar Rey Bueno

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PROLOGUE

MIGUEL LÓPEZ PÉREZ

History of alchemy has been considered a rich field of research for a few years, as meetings, conferences, monographs, collective books and an impressive number of scientific papers testify. There has never been before such a flow of scholarly communication on history of alchemy among historians. The conference from which this book originated is but another manifestation of this growing scholarly movement.

The international conference *Chymia: Science and Nature in Early Modern Europe*, held at the Royal University Center “Escorial - María Cristina” from September 7th to 12th, 2008 was, most of all, a come-true desire. The alchemical hobbies of the Spanish King Philip II had mainly took place at San Lorenzo’s Monastery of El Escorial. In 1587, one hundred meters away from where the conference was held, stood the largest alchemical laboratory of Europe in the sixteenth century, with four hundred alembics working at the same time (Archivo del Monasterio de San Lorenzo de El Escorial, XI-9). Surprisingly enough, this has not been well-known among historians of alchemy out of Spain, and the same is true for most of Spanish history of alchemy in early modern times. Therefore, one of the aims of this international conference, besides a *desiderium scientiæ* common to all of us, was to have as many historians of alchemy as possible come together to Spain and use this magnificent scene as an ideal place to talk about history of alchemy. It demanded a dreadful effort of organization and planning, an economic effort, and finally, a whole editing work, resulting in the present book.

During the conference in El Escorial, the good environment among participants, the high quality of papers, being delivered both by junior researchers and seniors, the possibility to exchange ideas and opinions at length in a friendly, pleasing, exciting atmosphere, and the desire to share scientific ideas were constant. The diversity of approaches in which this international meeting resulted is represented in the following pages as well. From detailed papers on the origin and diffusion of medieval texts to articles discussing unusual political situations, part of the substantial and varied impact of alchemy in culture and society of the past centuries reflects in this book.

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QUESTIONS OF METHODOLOGY
ABOUT PSEUDO-AVICENNA'S
DE ANIMA IN ARTE ALCHEMIAE:
IDENTIFICATION OF A LATIN TRANSLATION
AND METHOD OF EDITION

SEBASTIEN MOUREAU,
ASPIRANT DU F.S.R. – FNRS / UNIVERSITY OF LOUVAIN

In 1572, Mino Celsi edited in Basel in the publishing house of Pietro Perna a compendium of alchemical medieval texts entitled *Artis chemicae principes, Avicenna atque Geber*. Among the works of this compendium, we find the sole edition of a Latin treatise wrongly attributed to Avicenna, the *De anima in arte alchemiae*.¹ This work is a compilation and a Latin translation (the chronological order of these stages cannot be precisely defined)² of three Arabic treatises, probably written between the end of the 11th and the middle of the 13th century.³

This article is divided in two parts. In the first section are presented some practical considerations about identifying a Latin translation of an Arabic text. The second part proposes a method of edition for Latin medieval texts derived from the Lachmann system.

**1. Some considerations concerning the identification
of a translation**

When one faces a Latin text that contains Arabic features (linguistic or other), one of the main questions is to determine whether the treatise is a translation from Arabic, or a text directly written in Latin. In the next pages, I intend to give some practical remarks about this main question, referring, as an example, to the *De anima in arte alchemiae*.⁴

How to recognize a Latin translation of a lost Arabic treatise

To recognize that a Latin text is a translation from Arabic, the first step is historical research. If no Arabic original can be found, the searcher has to try to discover mentions of the treatise in other Arabic treatises (attributed to the same author or not). In the case of the *De anima in arte alchemiae*, no mention of it can be traced either in Avicenna's work, or in other Arabic treatises: the text seems to have not been much known to Arabic scholars. As opposed to this, many mentions of it are found in Latin texts. This lack of Arabic traces is important for the history of the text, but it does not prove anything about the status of the *De anima in arte alchemiae*, it does not show that the text is a later forgery.

Philological research is a more accurate way to identify a translation. Two stages of Latin translation from Arabic, corresponding to two different methods, may be defined.⁵ During the beginning of the movement of translations from Arabic, i.e. around the first half of the 12th century, translators used to keep a distance from the original text: they do not hesitate to rewrite the whole work (and sometimes attribute the treatise to themselves), and try to use Classical Latin. They also often write a prologue, explaining their work. The second stage, from the second half of the 12th century to the end of the 13th century, is characterised by a different system: translators try to give a Latin version that is as close as possible to the Arabic text, i.e. the method called *verbum de verbo*, a word by word system of translation.⁶ A translation of the first stage is very difficult to determine. Some of them are clearly described as translations in their prologue, but if not, the identification may be impossible. The content may give information, especially if the author (real or fake) is known, but this is clearly not significant: indeed, the text can be an apocrypha written in Arabic or in Latin. For example, the fact that the real Avicenna denied the possibility of transmutation⁷ is not sufficient to say that the *De anima in arte alchemiae* is not a translation. A more accurate observation is the presence of Latin transcriptions of Arabic words, but once again, these are not sufficient: some transcriptions were used even in Latin composition (even persons' and places' names)⁸. The Arabic word *alembic*, for instance, is found even in later Latin texts. However, a large number of transcriptions and transcriptions of rare words (hapax legomena or with a few occurrences) can indicate a translation, but this kind of wealth of transcriptions is rare during the first stage. Consequently, for translations of the first stage, we can find hypotheses, but it is generally impossible to assert anything with certainty without the original. When the text is a translation of the second stage, the problem is less difficult to solve. As for translations of the first stage, the content may provide the

addition of some information. But it is in the language itself that evidence of translation can be found, concerning transcriptions, morphology, syntax and style. The transcriptions, as has been said, can betray an Arabic origin: they are much more frequent in translations of the second stage. In the *De anima in arte alchemiae*, common words such as *alcofol* for *al-kuhl* (the kohl),⁹ and more rare terms such as *azer* for the Arabic *al-zīr* (the highest-pitched string of the Arabic lute) or *acercon* for *al-zarqūn* (the minium)¹⁰ are found. The word *in* is sometimes used in the meaning of *about*, corresponding to the Arabic *fī*. We also observe Spanish words such as *plata* for *argentum* (silver)¹¹, or *raton* for *mus* (mouse)¹², and even a specifically Andalusian word, *morabetini* for *al-murābiṭūn*, the Almoravid, which in this case designates a coin (the maravedis)¹³. About morphology, some word constructions are traces of other languages: in the *De anima in arte alchemiae*, we come across many infinitives ending in *-ar* instead of the Latin *-are*, which is a Spanish feature. The syntax is also a good indication: in the *De anima in arte alchemiae*, the presence of many exceptative formulas, i.e. concessive constructions (the Latin text abounds in *nisi*, much more than a usual Latin text), is a trace of Arabic syntax; we also observe the specific construction of the Arabic word *bayna* (meaning between): the phrase *inter laminam et laminam* (between the slices) is more Arabic, Latin would normally prefer *inter laminas*. The style can sometimes be interesting to observe, but in a less convincing way: the liking for supposed objections, such as “if somebody asks us... we will answer...”, is characteristic of the Arabic style. These results have to be interpreted: in the *De anima in arte alchemiae*, presence of Spanish words is not evidence that the treatise was translated from Spanish into Latin, because other elements have to be taken into account: the number of Spanish characteristics is much fewer than the Arabic characteristics and the historical background (the context of the translation from Arabic into Latin) leaves us think that the *De anima in arte alchemiae* is a translation from Arabic (specifically Andalusian Arabic) made in Spain. In addition to this, we must pay attention to interpolations: the *De anima in arte alchemiae* contains an Italian word, *scorza* (meaning the bark),¹⁴ but this sole term is not sufficient to assume an Italian origin, it is probably due to a later interpolation.

If these observations may help to put forward hypotheses, they are not really undisputable evidences. The best way to be sure that a text is a translation is to find translation errors. In the *De anima in arte alchemiae*, the translator uses the Latin word *porta* (meaning door) to designate a chapter.¹⁵ This comes from a confusion: in Arabic, the word *bāb* means *door*, but also *chapter*, so the translator made a mistake. This error could

also be intentional, following from the *verbum de verbo* method; the word *porta* also appears with the meaning of *door* in the treatise, so the translator used the same word *porta* to translate all the occurrences of *bāb*. Some extracts of the *De anima in arte alchemiae* are so obscure that the only explanation seems to be the lack of understanding of the translator.¹⁶ Another error in the *De anima in arte alchemiae* is to be found in two passages:¹⁷ speaking about the human sperm (used in pseudo-Avicenna's alchemy), the text is "*tempta inter digitos si se peccat aut non*", literally "*test with your fingers if it makes a mistake or not*" which means nothing intelligible. The word *se peccat* is actually a bad reading of an Arabic word: the translator read *ghalaṣa* (غلظ), meaning *to make a mistake, to be wrong*, and translated it into *se peccat*, instead of *ghaluṭa* (غلط), which signifies *to be thick*.¹⁸ This last proof is undisputable.

How to recognize a text directly written in Latin with Arabic features or with an Arabic attribution

If we find only signs that a text is a translation, but no undisputable evidence, the text could have been directly written in Latin with Arabic features or with an Arabic attribution (or both). This question is much more difficult to solve than the previous one.

The first step is historical research similar to the one explained before. By searching for an original, mentions of the text, fragments and other translations, evidence that the text is a translation can be found, and consequently evidence that the text was not directly written in Latin. However, it is important here to stress the question of fragments. Many compilations were made in Latin, but from different Arabic texts. To find these, a philological analysis is required: if we observe differences of languages between parts of a treatise, it could be a compilation. But we have to pay attention to the method of the *verbum de verbo*: with a very literal system of translation, differences stemming from Arabic are also found in the Latin translation, so that it becomes difficult to say whether the compilation was made in Arabic or in Latin.

Concerning the philological research, we can observe the same traces, i.e. concerning the content and the language, as explained above. Proving that a Latin text attributed to an Arabic author is not authentic brings out an argument, but no evidence. About the language, a) if some elements described before are found, i.e. indications of Arabic origin in vocabulary, morphology, syntax or style, three hypotheses may be put forward. 1) The text could be a translation, as mentioned before. 2) But it could also be a resumption of a translation, joined to other resumptions of texts which are

not translated or to direct compositions of the compiler. For example, the *Declaratio lapidis physici Avicennae filio suo Aboali* (another alchemical treatise attributed to Avicenna) is clearly a pseudepigraphical treatise directly written in Latin, but it contains some Arabic linguistics features;¹⁹ the explanation is that the *Declaratio lapidis* is actually a compilation of two texts: the beginning is a rewriting of quotations of the *De anima in arte alchemiae*, the second part is composed of quotations of the *Turba Philosophorum*, another Latin translation of an Arabic alchemical treatise. 3) As for the third option, the text may be a Latin treatise written in the style of a translation: for example, the *Summa perfectionis*, attributed to the Arabic author Jābir ibn Ḥayyān, is actually a Latin composition written as a translation.²⁰ b) If we do not find any (or not enough) Arabic element in the language, two hypotheses may be put forward. 1) The text could be a translation of the first stage, i.e. a translation in classical Latin. 2) The second possibility is that the text is a pseudepigraph directly written in Latin.

Thus for the question of texts directly written in Latin, we may not find evidence that the text is a pseudepigraph, but only that the text could be a pseudepigraph; there are only hypotheses. If a text shows no evidence of Arabic origin and is attributed to an Arabic author, we may never assert that it is directly written in Latin without external evidence, i.e. evidences outside the text,²¹ such as another translation of the same treatise, or quotations of a Latin treatise subsequent to the composition/translation: for example, the *Tractatulus Avicennae* is an apocryphal alchemical Latin treatise attributed to Avicenna, in which we find quotations of a commentary on the *Tabula Smaragdina* of Hortulanus, which was written in Latin around the middle of the 14th century.²² But even this kind of quotation may be doubtful, because of possible later interpolations.

2. Method of Edition

I will now present the method that I used to edit the *De anima in arte alchemiae*. This method can be applied to other Latin medieval texts. This explanation, preceded by a short inventory of the witnesses of the *De anima in arte alchemiae*, is given in the most practical way, explaining each step of the work.

Witnesses

Up to now eight manuscripts containing a part of the *De anima in arte alchemiae* have been found, not including Celsi's edition.²³

1. L = Oxford, Bodleian Library, Laud Misc. 734, ff. 1r-66r. End of the 13th - 14th century.
2. H = Glasgow, University Library, Hunter 253, ff. 1r-28r. End of the 13th - 14th century.
3. F = Paris, Bibliothèque Nationale de France, Ms. Lat. 6514, ff. 144r-171v. End of the 13th - 14th century.
4. C = Bernkastel-Kues, Bibliothek im St. Nikolaus Hospital, 299, ff. 1r-49v. 14th century.
5. V = St Gall, Stadtbibliothek (Kantonsbibliothek), Vadianus 300, ff. 1r-37r. 14th century.²⁴
6. O = Montréal, McGill University, Osler Library, 480, ff. 1r-227r. 14th century.
7. S = London, British Library, Sloane 1754, ff. 186v-193r. 14th century.
8. D1 and D2 = Oxford, Bodleian Library, Digby, 219, D1 ff. 1r-27v, D2 ff. 28r-74v. 16th century, containing two versions of the text.

As for other sources, we find two important groups of quotations:

1. Some passages in Vincent of Beauvais' *Speculum doctrinale* (book 11 entitled *De artibus mechanicis*) and *Speculum naturale* (book 7 entitled *De corporibus quae continentur in terrae visceribus*),²⁵ finished between 1256 and 1259.²⁶
2. A summary with quotations in a compendium of alchemical texts attributed to Roger Bacon (1214-1294), the *Sanioris Medicinae Magistri D. Rogeri Baconis Angli, de arte chymiae scripta (...)*, Frankfurt: Johann Saur et Johann Theobald Schönwetter, 1603, pp. 17-66 (l. 6): "Excerpta de libro Avicennae de anima [...] per fratrem Rog. Bacon. [...]"²⁷

Establishing the stemma codicum

In order to provide an edition as critical as possible, I use a method derived from Karl Lachmann's (1793-1851) system.²⁸ But the method that more precisely inspired me is the method of Joseph Mogenet²⁹ (1913-1980), Professor at the Université catholique de Louvain, already used in several PhD theses.³⁰ I will first briefly recall its main steps.

After choosing a reference text,³¹ Mogenet collates the manuscripts (with a column system). Then, he balances and sorts all the 'accidents'³² in accordance with precise pre-defined rules. Afterwards, he can compare

manuscripts two by two to determinate if they are in a direct filiation (the accidents of the father manuscript have to be in the son manuscript).

Since Mogenet worked on Byzantine astronomical texts, an adaptation of his method was necessary. But before explaining this, it is important to stress here the improvement of the collation method thanks to computers. With the Excel program, it is possible to make, in a simple file, a collation book which, if printed, would be around 5000 pages. Even without being an ecological militant, we see the advantage of computers for this kind of work.

The left column is the reference text, i.e. Celsi's edition; the others columns represent the different manuscripts:

	I	J	K	L	M	N	O	P	Q	R	S	T	U
	Celsi	O	H	L	C	F	V			D2	Sn	Sd	Rbsm
1259	ponderis,												
1260	perlas,				plas								
1261	lignum		lignum on lignum	ligna	ligna	ligna	ligna						
1262	aloes			aloen	aloen		aloen						
1263	quantum		quanti				quantum	5					
1264	ponderis,												
1265	&c			---	---	---		3					
1266	uocarum		uocant	zucarum	zucarum	zucarum	uc ^a num						
1267	sex			VI	VI	pondera	6						
1268	ponderia					seca							
1269	omnia												
1270	tere		terre										
1271	&c												
1272	conficias		conficiat	conficiat	conficiat	confice	conficiat						
1273	cum			---									
1274	info			---	ico		---						
1275	siropo			icofirone	firone	siropo	ytofirone						
1276	scilicet			---									
1277	polipodi		poripodi	polipodi	polipodi		polipodi						
1278	dmus					II	2						
1279	uncias,												
1280	radicis		rad'		rade	radicum	radicum						
1281	foeniculi,		fenicli		ferniculi on fenic	foeniculi	foeniculi						
1282	petroselini,		petrosilini	petrosilli	petrosili	petrosilini	petrosilini						
1283	&c												

After making the collation, I adapted Mogenet's system. Because of the length of the treatise (480 pages in Celsi's edition, reduced to 264 in my edition) and the large number of lacunas, it was necessary to work on samples instead of the entire book. As shown in table 1, the two samples chosen are 141 pages, which represent 29,3 % of the treatise. The first sample was chosen because it is found in almost all witnesses, the second was used to confirm hypotheses made by studying the first one.³³

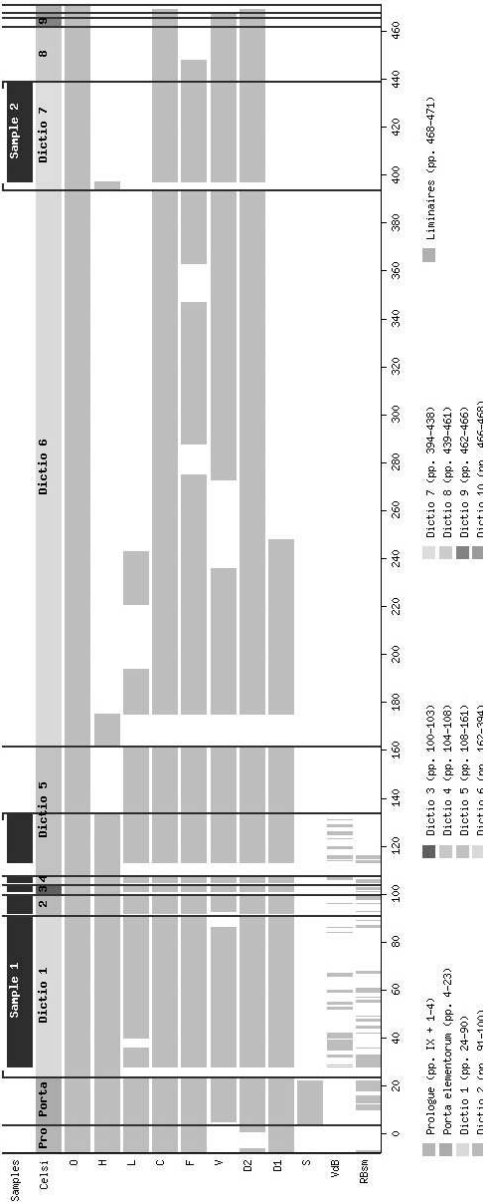


Table 1

Secondly, the categories chosen for balancing and sorting the accidents are adapted from those of Mogenet³⁴ to correspond to Latin medieval texts. Each accident has to be qualified:

- V major variant: important variant, viable reading opposed to another viable reading.
Example: *frigiditas* instead of *calor*.
- m minor variant: variant of minor importance, or due to a misreading of a word or an abbreviation. Example: *quod* instead of *quam*; *faciant* instead of *faciunt*.
- c case variant: variant of the case of a word that does not change the meaning of the sentence (medieval Latin allows great liberty in cases choice).
- L lacuna: omission of more than three words.
- O omission: omission of no more than three words.
- A major addition: addition of more than three words.
- a minor addition: addition of no more than three words.
- I inversion: change of word order.
- F error: every obvious error (written error, repetition, etc.). Examples: *quo* instead of *quō* for *quomodo*, *faciut* instead of *faciunt*.
- Gr written variant: written peculiarity. Example: *azeizar* instead of *azeizar*.
- Ch number variant: variant of a number (measurement, time, etc.).
- Inc incipit et explicit: some manuscripts contain incipit and explicit for chapters, that can distort the results.

When working on medieval Latin texts, it is not necessary to take all the accidents into account, since the medieval Latin tradition is more variable than the Greek tradition. The results can even be completely distorted by numbering accidents of lesser importance (such as the *faciut* instead of *faciunt* quoted here above).³⁵ Thus one cannot number all the accidents found in the text. Moreover, I had to leave aside some manuscripts of less importance. The D1 and D2 versions, as they are something like the complete rewriting of the treatise, were not studied with this system. I could not study manuscript O in the first sample for practical reasons: the Osler Library refused to make a copy of the manuscript because of its condition, and sent me a microfilm in which only half of the manuscript is legible. Fortunately, this manuscript O is the direct model of Celsi's edition, who did not change the text very much. The extracts and quotations were also left aside for the moment.

Once they are selected, the accidents are sorted into a table, not two by two like in Mogenet's system, but all together. In table 2, I show my results for the first sample. The horizontal coordinate shows the types of accidents, the vertical coordinate the manuscripts (the TOT. column indicates the total):

	V	m	c	L	O	A	a	I	F	Gr	Ch	Inc	TOT.
HLCFV	59	98	33	2	45	9	87	24		14	1	1	373
HLCF	3	12	2		3		12	4		4		1	41
HLC V	6	14	10		3			2		2			37
HL FV	1	8					1	1		2			13
H CFV		1					5						6
LCFV	49	102	50	7	94	17	70	13		23	1		426
HLC	3	9	1		1		2			10		1	27
HL F	1	2	1							6			10
HL V	1	4	1		1						1		8
H CF		3	2				7			1			13
H C V	1	5	3				2	1		2			14
H FV		5					2	1		4			12
LCF	3	15	13		4	3	12	2		9		38	99
LC V	14	33	25	2	23	2	11	4	1	19			134
L FV		5	2		1		2			4			14
CFV	1	12	5		3		5	1		1			28
HL			2		1					5			8
H C	3	6	1		4		2		1	6			23
H F	4	16	5	1	8		7			6			47
H V	4	13	2	2	2		3	1		8			35
LC	8	31	25	1	8	2	12	1	3	15		6	112
L F	2	11	3		5		1	1	3	6		2	34
L V	3	17	9		10		4	3	1	11			58
CF	2	16	4		6		8	4		7		1	48
C V	1	23	6	1	6	1	4	1	1	7	1		52
FV	5	12	10		11		6	6		7			57
H	71	27	2	33	20	2	19	1	7	105			287
L	9	9	6	7	8		4		11	60	1		115
C	51	26		14	13	1	18		29	102	1		255
F	81	45	4	13	32	6	53		7	128	6	1	376
V	116	33	3	32	39	4	29	1	21	122	5		405
													Total 3167

Table 2

For example, the first number (59) shows that there are 59 major variants (V) common to manuscripts H L C F V that are different from Celsi's version (reference text). It is also interesting to produce same tables with only major variants (V), minor variants (m), lacunas (L), omissions (O), major additions (A) and minor additions (a): these help to see the families better, as the results are not distorted by accidents of lesser importance (case variants, etc.).

In addition to table 2, I compared (table 3) the accidents by manuscript alone:³⁶

By ms.	Acc.	Ind.	Com.	% Perso.	% Com.
H	666	172	494	25,8	74,2
L	1009	37	972	3,7	96,3
C	1142	123	1019	10,8	89,2
F	1122	230	892	20,5	79,5
V	1194	253	941	21,2	78,8

Table 3

Once all this work has been done, we can try to interpret the results. Some numbers are indeed really significant, for example:

- The first line H L C F V of table 2 (373 accidents) seems to show that Celsi's edition (and, by the way, manuscript O) represents a separate branch of the tradition, as it is often opposed to all the manuscripts.
- The line L C F V of table 2 (426 accidents) seems to indicate that these manuscripts form a family.
- The line L C V of table 2 (134 accidents) seems to show that, in the L C F V family, the F manuscript has a special place
- The line L C of table 2 (112 accidents) seems to stress a link between those two manuscripts.
- The independent accidents of the L manuscript in table 3 (37 accidents) seem to indicate that L is closer to the archetype in the L C F V family (almost all its accidents are in the other manuscripts of the family).

The main disadvantages are the time it takes and the danger in interpreting the results. We may indeed be deceived by numbers and try to force the stemma to fit the results.

Edition

The manuscripts family chosen for the edition of the *De anima in arte alchemiae* is the L C F V family, in which preference is given to the L manuscript, due to its position in the tradition. This family seems to be less corrupt and more widespread (*textus receptus*).

When editing a translation, it is necessary not to try to edit the original text, but only the translation, including translation errors: it is then important to correct the text as little as possible, especially when the original is lost. This brings up problems with obscure passages, which are quite frequent in medieval alchemical texts: we may never use the *cruces* (i.e. the sign showing a corruption of the text in the tradition), as the corruption may come from the translator himself. The translator of the *De anima in arte alchemiae* was not a good translator, and the difficulty of many passages led him to commit mistakes because of his lack of understanding of the Arabic text. In addition to this, the edition of glosses is often very tricky: they may come from later scribes, but also from the author or from the translator. The most widespread method used for medieval Latin translations from Arabic, the *verbum de verbo*,—uses glosses thoroughly to make the text clear. Consequently, it is rarely possible to assert anything about them, and the editor has to edit them in the text. Another important problem is the Arabic transcriptions in Latin. The spelling of these words is generally different in each manuscript, and choosing a spelling for the edition is often difficult: when the word is not identified, we may follow the base manuscript, but when the word is identified and the base manuscript presents a distorted spelling, the choice is not simple.

3. Annexes

The version given here is my critical edition, but the pages refer to Celsi's edition. The first passage is about music, in a chapter about glass, and the second about geometrical measures.

Music

“Istud temptamentum est corporale, modo dicam tibi temptamentum spiritale. Tu scis quod dicit musica quia voces sunt duodecim, et unaquaeque illarum dividitur in multas partes talis est quod est alexir, almagne, et alibem, et alhanzar, et albenzar, et harin aharra minalcaf; et scias quod azer habet sonum altum, albane habet sonum sed non altum, alibem habet sonum latum, alanzar habet sonum longum. De vitro quod est bonum accipe.”³⁸

I give here Ruska’s proposal of explanation:³⁹ *azer* and *alexir* may correspond to *az-zīr* (الزير), that is, to the highest-pitched string of the Arabic lute; *almagne* and *albane* may be the transliteration of *al-mathnā* (المثنى), namely, the second string after the highest-pitched one; *alibem* may come from *al-bamm* (البم), the lowest string; *alhanzar* and *alanzar* could be *al-khinšir* (الخنصر), by which is meant the little finger or the musical mode corresponding to this one; *albenzar* may be the transliteration of *al-binsir* (البنصر), the ring finger; the words *harin aharta minalcaf* are more difficult to explain: Ruska proposes to see *harin* as a transliteration of *ḥādd* (حاد), which means high-pitched, and *aharta minalcaf* as *al-wusṭā min al-kaff* (الوسطى من الكف), the middle of the hand, that is, the middle finger.

The geometrical measures

“Debes scire quod maneries cum quibus mensurant in geometria sunt quinque: scilicet digitus et algerab et canna et albeu et algabet. Digitus est 2 ossa digiti, algerab est 6 pili iuncti infra 3, canna est 14 digiti; algatab est mons qui habet 12 portas, unaquaeque porta habet 1550 cannas, unaquaeque canna 14 digiti, ergo in illo monte unaquaeque porta habet 21 700 digiti, et unusquisque digitus habet 18 pilos iunctos, ergo sunt in isto monte de pilis iunctis 1 200 000 renumerata 4 vices et 500 000 renumerati 3 vices et 30 000 et 25.”⁴⁰

Proposal of explanation:⁴¹ *albeu* could come from *al-bā* ‘الباع’ (or from its plural *al-’abwā*) which means the fathom;⁴² *algerab* may be derived from the Arabic word *al-jarīb* (الجريب), meaning the acre (the surface measure); *algabet* could come from *al-qabḍ* (القبض) or *al-qabḍa* (القبضة), which designates a measure of one-sixth of a cubit; *algatab* could come from the same word as *algabet*, or could be a transcription of *al-qaḍīb* (القضيب), the cane;⁴³ *mons, jabal* (جبل) in Arabic, may come from a

confusion for the word *habl* (حبل), which means *rope, cable*,⁴⁴ *porta, bāb* (باب) in Arabic, is probably a bad reading of the word *nāb* (ناب), which designates a measure of six cubits.

Notes

¹ (pseudo-) Avicenna, *De anima in arte alchemiae*, in *Artis Chemicæ Principes, Avicenna atque Geber*, ed. Mino Celsi, Basel : Pietro Perna, 1572, 9 pp. not numbered + pp. 1-471

(<http://web2.bium.univ-paris5.fr/livanc/?cote=75697&do=livre>), hereafter cited as DAIAA. The other works of the compendium are: the *De investigatione perfectionis Gebri* (pp. 473-497), the *Summa perfectionis Gebri* (pp. 497-708), the *De inventione veritatis Gebri* (pp. 709-735), and the *Liber Fornacum Gebri* (pp. 736-767).

² However, we may propose the dates 1226 or 1235 for the Latin translation, as proposed in a colophon in two witnesses.

³ Cf. Sébastien Moureau, *Le De anima in arte alchemiae du pseudo-Avicenne. Edition critique, traduction et étude*, Louvain-la-Neuve: Faculté de Philosophie, Art et Lettres, Institut orientaliste, mars 2010. This PhD thesis will be published within the next years. As for older studies about the *De anima in arte alchemiae*, see: Marcellin Berthelot, *Histoire des sciences. La chimie au Moyen Âge*, avec la collaboration de Octave Victor Houdas pour les textes arabes, Paris: Imprimerie nationale, 1893, t. 1, 293-305; Moritz Steinschneider, “Zur alchimistischen Literatur der Araber,” *Zeitschrift der Deutschen Morgenländischen Gesellschaft*, 58 (1904): 309-315; Moritz Steinschneider, *Die europäischen Übersetzungen aus dem Arabischen bis Mitte des 17. Jahrhunderts*, Vienna: Carl Gerold's Sohn, 1904-1905, § 143, (Sitzungsberichte der Akademie der Wissenschaften in Wien, 149 and 151); Julius Ruska, “Die Alchemie des Avicenna,” *Isis* 21 (1934): 23-45; Julius Ruska, “Zum Avicennatext des Cod. Vadianus 300,” *Sudhoffs Archiv* 27 (1934): 499-510; Georges C. Anawati, “Avicenne et l'alchimie”, in *Oriente e Occidente nel Medioevo : filosofia e scienze, Convegno internazionale 9-15 aprile 1969*, Rome: Accademia nazionale dei Lincei, 1971, 286-288; Georges C. Anawati, “L'alchimie arabe”, in Roshdi Rashed (dir.), *Histoire des sciences arabes, III : Technologie, alchimie et sciences de la vie*, Paris: Le Seuil, 1997, 111-141; Sébastien Moureau, “Some Considerations Concerning the Alchemy of the *De anima in arte alchemiae* of Pseudo-Avicenna,” *Ambix* 56 (2009): 49-56.

⁴ In this article, I refer to the *De anima in arte alchemiae* as a whole, not as a compilation of three Arabic treatises, as it is used as an example. For the complete discussion (much longer) about the three parts of the *De anima in arte alchemiae*, cf. Sébastien Moureau, *Le De anima in arte alchemiae du pseudo-Avicenne. Edition critique, traduction et étude*, Louvain-la-Neuve: Faculté de Philosophie, Art et Lettres, Institut orientaliste, mars 2010.

⁵ I am here summarizing and simplifying the question, the periods are not so clearly defined. Cf. Charles Burnett, “Translating from Arabic into Latin in the

Middle Ages, theory, practice, and criticism”, in Steve G. Lofts and Philipp W. Rosemann (dir.), *Editer, traduire, interpréter : essais de méthodologie philosophique*, Louvain-la-Neuve: Editions Peeters, 1997, (Philosophes médiévaux, XXXVI), 57-78.

⁶ For more information about this method, cf. Charles Burnett, “Translating from Arabic into Latin in the Middle Ages, theory, practice, and criticism”, in Steve G. Lofts and Philipp W. Rosemann dir., *Editer, traduire, interpréter : essais de méthodologie philosophique*, Louvain-la-Neuve: Editions Peeters, 1997, (Philosophes médiévaux, XXXVI), 57-78.

⁷ As he said in the *Kitāb al-ma’ādin wa al-āthār al-’ulwiyya* (*Book of metals and celestial phenomena*), the 5th part of the *ṭabī’iyyāt* (*physics*) of the *Kitāb al-Shifā’* (*Book of healing*), translated under the title *De mineralibus* (but more known by historians under the title *De congelatione et conglutinatione lapidum*). Cf. Jean-Marc Mandosio and Carla Di Martino, “La ‘Météorologie’ d’Avicenne (Kitāb al-Shifā’ V) et sa diffusion dans le monde latin”, in *Wissen über Grenzen : arabisches Wissen und lateinisches Mittelalter* (Berlin: De Gruyter, 2006), 404-25.

⁸ We may mention the particular case of the Latin translation of Avicenna’s *Kitāb al-ma’ādin wa al-āthār al-’ulwiyya*, in which the translator Alfred of Sareshel try to erase any Arabic traces and insert fake Greek traces. Cf. Jean-Marc Mandosio and Carla Di Martino, “La ‘Météorologie’ d’Avicenne (Kitāb al-Shifā’ V) et sa diffusion dans le monde latin”, 414-6.

⁹ *DAIAA*, p. 154.

¹⁰ *DAIAA*, pp. 118-119.

¹¹ *DAIAA*, pp. 45, 47, 99.

¹² *DAIAA*, p. 50.

¹³ This word appears 34 times in the treatise and seems consequently not to be a later interpolation.

¹⁴ *DAIAA*, p. 295.

¹⁵ The word *porta* is used nine times with this meaning.

¹⁶ I think about two passages in which many Arabic transliterations are found. Even with the identification of the Arabic words, the text does not mean anything. I give those two passages at the end of this article (annexes).

¹⁷ *DAIAA*, pp. 78, 116. I quote only the first passage here, the mistake is the same in both.

¹⁸ I thank Charles Burnett for helping me to understand this translation mistake.

¹⁹ Cf. Julius Ruska, “Die Alchemie des Avicenna”, *Isis* 21 (1934): 45-8.

²⁰ Cf. William R. Newman, *The Summa Perfectionis of pseudo-Geber, a critical edition, translation and study* (Leyde: E. J. Brill, 1991). However, the question is still discussed. Ahmad Y. Hassan claims that the text is likely a translation from Arabic, cf. his articles about the *Summa perfectionis* on his website: <http://www.history-science-technology.com/Summa/Summa.htm>.

²¹ Even if the content is not compatible with the doctrine of the Arabic author to whom the text is attributed, the pseudepigraph could have been written in Arabic and then translated.

²² Cf. Julius Ruska, “Die Alchemie des Avicenna”, *Isis* 21 (1934):. 48-50.

²³ Each manuscript is preceded by the sigla we use in this article. I do not mention here the very short extracts found in some manuscripts, except the Sloane 1754 (which is longer). However, this Sloane 1754 is not included in my further discussion and stemma codicum, due to its shortness.

²⁴ Cf. Julius Ruska, “Zum Avicennatext des Cod. Vadianus 300”, *Sudhoffs Archiv* 27 (1934): 499-510.

²⁵ Cf. Vincent de Beauvais, *Speculum Quadruplex sive speculum maius, naturale / doctrinale / morale / historiale* (repr., Graz : Akademische Druck- u. Verlagsanstalt, 1964) (1st ed., Douai: Balthazar Beller, 1624), 4 vol., 1053-1072 of the *Speculum doctrinale* and pp. 425-492 of the *Speculum naturale*.

²⁶ Cf. Monique Paulmier-Foucart, “L’atelier Vincent de Beauvais. Recherches sur l’état des connaissances au Moyen Âge d’après une encyclopédie du XIII^e siècle”, *Le Moyen Age* 85 (1979) : 87-99.

²⁷ The same summary is found in two manuscripts: Pennsylvania, University of Pennsylvania, codex 110, ff. 42v-45v (first half of the 15th century), but without the attribution to Roger Bacon; and Oxford, Bodleian Library, Ashmole 1467, ff. 1r-30r (16th century). I prepare at the moment a critical edition of this summary. At the point where the *Sanioris medicinae (...) scripta* stops quoting the *De anima in arte alchemiae* at chapter 2 of the 5th *dictio* (the chapters of the treatise are called *dictiones*, a literal translation of the Arabic *maqāla*, which designates a section of a book) and begins to quote the *Epistola ad Hasen regem de re recta*, the manuscripts continue the summary. The *Sanioris medicinae (...) scripta* were reprinted in 1620 (Frankfurt: Joannes Carolus Unckelius).

²⁸ Lachmann, Karl, *Kleinere Schriften zur Classischen Philologie*, ed. Jphannes Vahlen (Berlin : Reimer, 1876).

²⁹ Joseph Mogenet, *Autolycus de Pitane : histoire du texte ; suivie de l’édition critique des Traités de la sphère en mouvement et des levers et couchers* (Louvain : Bureaux du Recueil, 1950).

³⁰ Cf. Theon of Alexandria, *Le Grand commentaire de Théon d’Alexandrie aux Tables faciles de Ptolémée*, ed. Joseph Mogenet), rev., compl. and comment. Anne Tihon (Città del Vaticano: Biblioteca apostolica Vaticana, 1985-1999).

³¹ By reference text, I do not signify the base text of the edition, but only the text that will be used as a reference for the collation.

³² By this word, he means everything that happens to the text (all the readings of the witnesses), not only variants, but also omissions, lacunas, additions, etc.

³³ The first line shows the samples. The transversal bars (with the little horizontal bars upon them) mark them out. The order of the witnesses prefigures the linear order of our stemma codicum. The VdB line shows the extracts of Vincent of Beauvais’s *Speculum maius*, the Rbsm line those of Roger Bacon’s *Sanioris medicinae (...) Scripta*. The page numbers in brackets show the pages in Celsi’s edition. The chapters of the treatise are called *dictiones* (see n. 27).

³⁴ The list given here contains only a summary explanation of my classification, the rules are actually more precise (and take up much more space, so I cannot give them all here). They are all preceded by the sigla used for the rest of this article.

³⁵ Moreover, the case variants (c), the errors (F) and the inversions (I) are almost never numbered when they belong to one witness alone (unless they are important), because they are too frequent.

³⁶ This table shows the results for the first sample, without case variants, inversions, errors, written variants, number variants, and incipit-explicit. "Acc." column shows accidents, "Ind." column independent accidents (that we find only in this manuscripts), "Com." column common accidents (common with one witness or more).

³⁷ For the witnesses I could not study with the method I explained (like D2, extracts, quotations, etc.), this observation of the accidents one by one was the only way to classify them.

³⁸ *DAIAA*, p. 155. "This test is corporeal. Now, I will tell you about the spiritual test. You know that music says that there are twelve voices, and that each of them is divided into many parts, such as: *alexir*, *almagne*, *alibem*, *alhanzar*, *albenzar*, and *harin aharra minalcq*. Know that the *azer* has a high-pitched sound, and that the *albane* has a sound, but not high-pitched. The *alibem* has a wide sound, and the *alanzar* has a long sound. Take glass of good (quality)."

³⁹ Cf. Julius Ruska, "Die Alchemie des Avicenna", *Isis* 21 (1934): 42.

⁴⁰ *DAIAA*, pp. 338-339. "You have to know that there are five measures in geometry: the finger, the *algerab*, the cane, the *albeu* and the *algabet*. A finger is two bones of the finger; an *algerab* is six times three hairs joined; a cane is fourteen fingers; the *algatab* is a mountain that has twelve doors, each door measuring a thousand five hundred and fifty canes of fourteen fingers each. In this mount, each door thus measures twenty-one thousand seven hundred fingers, and each finger measures eighteen hair joined; so there are in this mount on million two hundred thousand multiplied by four, plus five hundred thousand multiplied by three, plus thirty thousand plus twenty-five hair joined."

⁴¹ To explain this passage, I specifically used the lexicon of Al-Khwārizmī (not the mathematician, but a Persian secretary of the 10th century): Al-Khwārizmī, *Mafātīḥ al-'ulūm*, ed. Gerard van Vloten, 2nd ed., Leiden: Brill, 1968 (1st ed. 1895).

⁴² *Albeu* could also come from *al-bawā'* (البواء), a very rare word which designates the *equality*, the *equivalence*, but that seems much less probable.

⁴³ Whatever the hypothesis, it causes an arithmetical problem.

⁴⁴ This word is the proposition of Julius Ruska in "Die Alchemie des Avicenna", *Isis* 21 (1934): 41.

THE JEWS AND ALCHEMY: NOTES FOR A PROBLEMATIC APPROACH*

GABRIELE FERRARIO,
RESEARCH ASSOCIATE, UNIVERSITY OF CAMBRIDGE

The idea of the existence of a peculiar relationship between the Jewish people and the secrets of alchemy has been held since the origin of this art. It has left traces in many alchemical treatises written by non-Jews and in general histories of philosophy and science.

Marcelin Berthelot, in his pioneering works on Greek alchemy, provides a translation and a commentary on three ancient alchemical documents in Greek language in which reference is made to the Jewish people and the Hebrew language. In the works of the Pseudo-Democritus – composed probably between the first century BCE and the first century CE – some Greek names of precious stones, of minerals and of alloys are transcribed in Hebrew letters. Berthelot explains this feature as the result of the will of the author to conceal the alchemical knowledge to laymen.¹ This assumption seems to imply that the knowledge of the Hebrew language – or, at least, of its alphabet – was considered in these early sources as an essential requirement for the alchemist.² Moreover, one passage of the Greek treatise *De Arte Sacra* (“On the sacred art”) attributed to Olympiodorus and studied by Berthelot makes reference to the Jewish people as the only depositories of the secrets of the alchemical art: “μόνοι δέ Ἰουδαίοις ἐξὸν ἦν λάθρα ταῦτα ποιεῖν καὶ γράφειν, καὶ ἐκδίδοναι” (“only the Jews obtained its knowledge and wrote and described these things in a secret language”).³ Other evidence of the early perception of a close relationship between the Jews and alchemy is to be found in the Leiden Papyrus known as Papyrus W, which appears to be largely based on anonymous works ascribed to Moses.⁴ In this work, an example of early gnosis and hermetic knowledge, many are the references to Biblical figures, such as Moses, Abraham, Isaac and Jacob and to the Temple of Jerusalem.

Among the earliest statements of Jewish excellence in the field of alchemy there are the references to the teachings of the Jews in the works of Zosimus of Panopolis (4th-5th century CE): in many passages of his treatises, Zosimus quotes alchemical authorities of the past.⁵ In particular, he maintains to have derived a large part of his knowledge from the teachings of a certain “Mary”, who is frequently referred to as “the Jewess”.⁶ Even if the original works of this alchemical authority are to be considered lost and scholars have to rely on secondary sources such as Zosimus’ quotations, the presence of a Jew – true or legendary – at the very beginning of the traditional history of alchemy would leave a deep mark in the beliefs of the adepts of the Art.⁷

The apocryphal *Fourth Book of Enoch* – known also as *Ethiopic Book of Enoch* – contributes to the idea of a pre-eminence of the Jewish people in the field of the practical arts with the tale of the rebellion of the angels who revealed the secrets of the arts to humans:

7.1 [...] they [the rebel angels] taught them charms and spells, and showed to them the cutting of roots and trees [...]. 8.1 And Azazel taught men to make swords, and daggers and shields and breastplates. And he showed them the things after these, and the art of making them: bracelets, and ornaments, and the art of making up eyes and of beautifying the eyelids, and the most precious and choice stones, and all [kinds of] coloured dyes. And the word was changed.⁸

Alchemists in every time tried to dignify their art through the attribution of the origins of their doctrines – and the composition of alchemical treatises, as well – to illustrious authorities of the past.⁹ This is the case of Biblical characters, whose names were used as a guarantee of authoritativeness by many authors. As an example, Adam himself was assumed to be the first recipient of the alchemical knowledge which was taught to him by God or by one of his angels.¹⁰

The idea of a Jewish primacy in the field of alchemy lived on even after the Enlightenment,¹¹ until at least the end of the 18th century, when the influence of the movement of the *Haskalah* led Jewish scholars to a strongly negative view of all the aspects of the literary and intellectual production of the Jews that were considered in opposition with the enlightened reason. Alchemy, together with cabala, was banned from the number of ‘accepted’ disciplines and Jewish scholars tended to condemn it as a fraudulent practice and to deny any participation of the Jewish people to its development.¹²

This tendency can be found for instance in the works of the master of Hebrew bibliography, Moritz Steinschneider. When dealing with the

subject of alchemy, he tends to minimize the implications of the Jews in this art, as apparent in an article published in 1873, where he assumes that the Jews were too acquainted with the use of real balances for being misled by the philosopher's stone.¹³ In a note in the same article, Steinschneider remarks that he does not know any evidence about a particular relationship between the Jews and the knowledge of alchemy. He then assumes that in a later period some alchemical writings were pseudo-epigraphically attributed to Sa'adiah Ga'on and Maimonides. Although in his catalogues of the Hebrew manuscripts preserved in the major European libraries he happened to describe alchemical treatises in Hebrew language,¹⁴ he tended to consider any attribution of alchemical works to Jewish authors as pseudoepigraphical.¹⁵

A similar point of view is found in the first *Jewish Encyclopedia* published in New York in the first decade of the 20th century. Moses Gaster, author of the entry 'alchemy', is very sceptical about the Jewish contribution to it, although he recognizes that "there is, however, scarcely a single important ancient work upon the science which is not directly related to the Jews, with their traditions and their science".¹⁶

In the three editions of the *Encyclopaedia Judaica*, the voice alchemy is committed to the pen of Bernard Suler. In his contributions, Suler traces a complete account of the relationship between the Jews and alchemy, remarking the fact that the Jewish pre-eminence in the field was mainly stated in treatises written by non-Jews. Although he recognizes that much research is still to be conducted, he seems to agree with Steinschneider's opinion when he maintains:

The number of Jews who practiced the art of alchemy was apparently relatively small; however the state of knowledge on this point is incomplete [...]. The conclusion at which De Pauw arrived 150 years ago, namely that the Jews were the creators of alchemy, is incorrect. Alchemy is neither a Jewish science nor a Jewish art. The Jews were engaged in it in the same measure as they were engaged in other secular traditions or fields of knowledge.¹⁷

A similar position was shared by Joshua Trachtenberg in his work on *Jewish Magic and Superstition* published in 1939, where he does not deal with alchemy apart from a brief note in the chapter on medicine. He considers alchemy as part of the magical arts and states that it had in general very little currency among the Jews. He adds that, although the Jews were traditionally considered to be adepts of the Art, there is no

evidence of this fact in any of the Hebrew Northern European literary works he was acquainted with.¹⁸

A radically new approach to the problem of the relationship between Jews and alchemy is found in Gershom Scholem's contribution to the knowledge of the connections between alchemy and cabala.¹⁹ The explicit aim of Scholem's book is to clarify the boundaries of the two fields of knowledge and analyze their relationship in order to clear the confusion that eventually led to consider the two words as synonyms. As a starting point, Scholem explains that there is a theoretical difference between the beliefs of the alchemists and those of the cabalists and that this difference is found at the level of the basic principles of the two doctrines: while for the alchemists gold is associated with the masculine principle and silver with the feminine one, the case is completely the opposite in Jewish mystical writings. This basic opposition would avoid – at least during the Middle Ages – any real intersection between the two doctrines: the confusion between the two fields of knowledge took place later and was actively promoted by Christian cabalists, who started to make use of concepts derived from the Jewish cabala together with images of alchemical origin.

Patai's project of reconsidering the role of the Jews in the transmission and development of alchemy was accepted by the academic world with some noticeable critics. In a review appeared on *Isis* in 1995, Gad Freudenthal criticizes the phenomenological – more than historical – approach showed in Patai's book. He then suggests two main points of weakness in Patai's work: firstly, "converted Jews and some persons whose Jewishness is more than doubtful receive extensive treatments, although naturally their writings have nothing Jewish to them", secondly that "the criterion by which a text is considered as alchemical is rather blurry". He eventually concludes that "Patai's occasional general suggestions concerning Jews' interest in alchemy are unsatisfactory".²⁰ In his own review of the same book, Tzvi Langermann comments on Patai's monograph defining it a "work of antiquarianism, not one of professional scholarship". The questions raised in Langermann's review can be considered a stimulating starting point for debate and further study: "Is there anything in the values and traditions of Judaism that can help us understand the Jewish interest, or lack thereof, in alchemy?"²¹ In other words: is there any trace of a kind of alchemy that could be described as peculiar to Jews?

Much work still has to be done in order to unveil the contents of manuscripts that could preserve possible traces of genuine alchemical treatises written by Jews. I am referring in particular to the still

unidentified and unpublished contents of a large part of the Hebrew and Judaeo-Arabic fragments found in the Cairo Genizah. The Taylor-Schechter Collection at Cambridge appears to preserve a noticeable number of fragments of alchemical treatises and of collections of recipes that could bring fresh evidence for attempting an answer to Langerman's question.²² Reference to Genizah fragments with alchemical content appeared in scholarly works on alchemy²³ and I recently found a portion of a Judaeo-Arabic alchemical treatise in the miscellaneous manuscript T-S K2.4: the fragment can be roughly dated to the second half of the 12th century and is composed of 21 leaves (10 bifolia and 2 separate leaves); its content is mainly calendrical and astronomical, apart from f. 1r where an alchemical recipe with the title "the operation of mixture" is preserved.²⁴ At the present state of knowledge, the scarce evidence of the interest of Jews in alchemy – mostly if compared to their contribution in other fields of medieval sciences – seems to lead to the denial of a noticeable involvement of the Jews in the alchemical production and of the existence of a genuine Jewish alchemy. Nevertheless, it appears wise to keep in mind that the material preserved in the Genizah fragments has already proved to be an extremely rich and often revolutionary source of knowledge on everyday life, culture and relationships of the medieval Jewish communities around the Mediterranean, from their economical and juridical organization to their poetical production and tastes.²⁵

On the other hand, it should be remarked that alchemy should be considered as a complex discipline based on theoretical assumptions and philosophical speculations, but also as an art constituted for a large part of experiments carried out in laboratories, of technical innovations and discoveries, of continuous testing of recipes with the aim of correcting them and making them more effective.²⁶ If we consider the practical nature of alchemy as an art, every new recipe and even every single correction of the quantity of ingredients to be used in an alchemical process has to be regarded in this sense as an original contribution. Even if the Jewish people did not express any new – or characteristically Jewish – approach to alchemy, there is clear evidence of the practical efforts of alchemists of Jewish origins, who translated and transmitted Arabic and Latin alchemical treatises, adding their own remarks based on their direct practical experiences and, thus, contributing to the practice of alchemy.

As an example, I would like to briefly describe some features of the Hebrew version of the medieval Arabic alchemical treatise that was known in the Latin world with the title *Liber de aluminibus et salibus* and is preserved in MS Orient. klein 514 (Staatsbibliothek, Berlin).²⁷ The manuscript consists of 90 folio pages, small in size (5,7 inches by less than

4), and it is written in a minute Sephardic cursive writing. Steinschneider proposed to date the manuscript to the XVth or the XVIth century, while Patai assumed it had to be ascribed to the XVIIth century.²⁸ Patai's dating is to be considered right, since at folio 49 of the manuscript there is evidence of a quotation of a work by Mošeh Šlomoh Delmedigo, the *Sefer Elim*, which was published in Amsterdam by Menasseh ben Isra'el in 1629.²⁹

The most interesting feature of the Hebrew manuscript for our purposes is the presence in the text and in its margins of a huge number of notes introduced by the abbreviation *nun – lamed* (נל) that stands for the expression *nireh li* “in my opinion” and by the abbreviation *reš – lamed* (רל), *rošeh lomar*, “this means”. The content of these glosses can be divided in two categories: the first kind are brief notes in which a different reading for a word in the main text is suggested; the second kind is represented by longer notes in which the glossator proposes a complete different recipe as alternative to the one in the text. I am disposed to believe that the author of these notes was an alchemist himself, who wished to correct the recipes in the text according to his knowledge or to add other operative possibilities, apparently basing his comments on direct laboratory experience. In the main text, a huge number of notes and recipes – often between brackets – are introduced by the aforementioned abbreviations and by *sevarah aheret* (ס"ד), “another interpretation” and appear to be interpolations, since none of them is found in the only extant Arabic manuscript of the treatise (MS Sprenger 1908, Staatsbibliothek zu Berlin) nor in the Latin translations of the *De aluminibus et salibus*. As an example, in folio 30*verso* of the manuscript - where the description of the treatment of gold is presented - a note between brackets and introduced by *nireh li* suggests: “In my opinion, take an amount of sublimated mercury three times bigger than the amount of gold; take sulphur whitened or reddened in its fire; cerate them in some water of ammoniac salt in which you already dissolved some vitriol. Dissolve everything and let it coagulate. This is a commentary”. Other examples of this kind of interpolations can be found at folio 31*verso*, where the glossator suggests that a defined amount of elixir should be used on iron, and on page 41*recto*, where a note contains an explicit exhortation to keep in mind the importance of filtering blood, one of the ingredients of the recipe in the main text.

If we consider alchemy as a purely theoretical activity, the contents of manuscript Berlin 514 should be regarded as a mere re-elaboration of recipes which were common knowledge to the adepts of alchemy. Treatises like the one I described and other evidence that is recently being

investigated are devoid of any apparent theoretical or doctrinal contribution and the “Jewishness” of their authors does not shape in any way the contents of their works: a provisional answer to Tzvi Langermann’s question should lead to the denial of the existence of an alchemy that could be defined as peculiar to the Jews. On the other hand, the few sources yet discovered and studied testify of a certain interest of Jews in the practice of alchemy, whose extent could be revealed only through a wider and systematic research on the extant manuscript evidence.

Notes

* I would like to thank the Chemical Heritage Foundation (Philadelphia, PA) where, as the 2007-2008 Roy J. Neville Fellow, I was able to conduct part of the researches for this article and the Taylor-Schechter Genizah Research Unit (Cambridge University Library, UK) where, while working as a research associate funded by the Arts and Humanities Research Council (UK), I found ideal conditions for reviewing this article for publication. I am very thankful to Professor Didier Kahn for his precious corrections and suggestions and for the patience shown in editing this paper.

¹ Marcelin Berthelot, *Collection des anciens alchimistes grecs*, 3 vols (Osnabrück: Otto Zeller, 1967 – reprint of the 1888 edition), III, 25-26.

² This concept is strongly remarked in Raphael Patai. *The Jewish Alchemists. A History and Source Book*, (Princeton: Princeton University Press, 1994), 50-51.

³ (Pseudo-)Olympyodorus, *Εἰς τὸ κατ’ ἐνέργειαν ζωσίμου ὅσα ἀπὸ Ἑρμοῦ καὶ τῶν φιλοσόφων ἦσαν εἰρημένα* (*De arte sacra*); cod. Ven. Marc. 299, fol. 163r; Berthelot, *Collection...*, II, 90; III, 98; Jean Letrouit, “Chronologie des alchimistes grecs”, in Didier Kahn and Sylvain Matton (eds), *Alchimie: art, histoire et mythes*, (Paris – Milano: SEHA – Archè), 19-20.

⁴ The Leiden Papyri, dated to the 3rd century CE, were part of the collection of Greek papyri owned by Johann d’Anastasy, Swedish vice-consul in Alexandria (Egypt) during the first years of the 19th century. A large part of these manuscripts was sold to the Dutch Government in 1828 and then preserved in the Rijksmuseum van Oudheden in Leiden. The first edition appeared in Charles Leemans, *Papyri Graeci musei antiquarii publici Lugduni Batavi... edidit, interpretationem latinam, adnotationem, indices et tabulas addidit C. Leemans* (Leiden: Brill, 1885). See Berthelot, *Collection...*, I, 16-19; II, 99, 144-153. Id., “Alchimie”, in *La Grande Encyclopédie. Inventaire raisonné des sciences, des lettres et des arts*, 31 vols, (Paris: Librairie Larousse, 1886-1902), II, 13 and Patai, *Jewish...*, 56-57.

⁵ For the mentions of “Jewish writings” as sources in Zosimus, see Letrouit, “Chronologie...”, 40.

⁶ Michèle Mertens (ed.), *Les alchimistes Grecs, Zosime de Panopolis, Mémoires authentiques* (Paris: Les Belles Lettres, 1995), III, 1; VII, 1-4; VIII, 2. See Berthelot, *Collection...*, II, 144-153. On the works of Zosimus preserved in Arabic translation, see Benjamin Hallum, “Zosimus Arabus. The Reception of Zosimos of

Panopolis in the Arabic/Islamic World” (PhD diss., University of London – The Warburg Institute, 2008). On Mary, see Letrouit, “Chronologie...”, 20-21.

⁷ The name of the cooking apparatus and technique known as *balneum Mariae* (French: *Bain Marie*; German: *Marienbad*; Italian: *Bagno Maria*) stands as a clear example of the long-lasting fame attributed to Mary the Jewess. On the legends that started to grow around the figure of Mary only few decades after the writings of Zosimus, see Berthelot, *La Chimie au Moyen Âge*, (Paris: Imprimerie Nationale, 1893), III, 125.

⁸ Michael A. Knibb (ed.), *The Ethiopic Book of Enoch. A New Edition in the Light of the Aramaic Dead Sea Fragments*, in consultation with Edward Ullendorf, 2 vols. (Oxford: Oxford University Press, 1978), II, 76-81. Knibb records interesting variants to the passage at 8.1: the Ethiopic version of Enoch, the *Codex Panopolitanus*, and quotations in Syncellus claim explicitly that the angel Azazel taught men “metals, and the art of working with them” and “the metals of the earth and gold, how they work [them]”. An interesting interpretation of the myth of the fallen angels as source of the alchemical knowledge among humans is given in Moshe Idel, “The origin of alchemy according to Zosimus and a Hebrew parallel”, *Revue des Études Juives* 145 (1986): 117-124.

⁹ As far as medieval alchemy is concerned, see William Newman, “Technology and the Alchemical Debate in the Late Middle Ages”, *Isis* 80, 3 (1989): 423-5.

¹⁰ The identification of Adam as the first alchemist was held among the others by Vincent of Beauvais, *Speculum maius: Speculum naturale* (Venice, 1591; first ed. Strasbourg 1475), f. 82a; by the author of the *Book of Sidrach*, see Hermann Friedrich Jellinghaus (ed.), *Das Buch Sidrach: Nach der Kopenhagener Mittelniederdeutschen Handschrift V. J. 1479*, (Tübingen: Bibliothek des Litterarischen Vereins in Stuttgart, 1904), 96-97: “De konnigh vraghet: Dat yseren, dat also hart is, wo wert dat erstwerf ghesmedet? Sydrach secht: God de makede alle dink unde he wuste woll alle dink, des de mynsche behoven scholde in entryke unde he esschede Adam unde liet eme wysen synen enghel, dat he neme yseren dat gheschapen was also erde unde dat he dat vorgadderden scholde unde sede eme, wo he dar aff hemeren maken scholde unde ok tanghen unde ambolt unde alle andere dinghe, de he behoven scholde”; and, in a literary context, by Ben Johnson, *The Alchemist*, London, 1612, act 2, scene 1, line 80: “Will you believe antiquity? records? / I’ll shew you a book where Moses and his sister, / And Solomon have written of the art; / Ay, and a treatise penn’d by Adam / On the philosopher’s stone, and in High Dutch”.

¹¹ See, as an example, Cornelius Franciscus De Pauw, *Recherches philosophiques sur les Égyptiens et les Chinois*, (London – Lausanne – Geneva, 1771), 390-1: “Les juifs de l’Égypte avoient été en grande partie ruinés sous le règne de Cléopâtre, qui détestoit cette colonie de monopoleurs et d’usuriers venus de la Palestine sous les premiers Lagides. [...] Pendant cette détresse quelques-uns de ces malheureux tombèrent par désespoir dans une dévotion outrée et un fanatisme intolérable [...]. Or, ce sont ces visionnaires [...] que je soupçonne d’avoir les premiers imaginé la fable grossière touchant la transmutation des métaux, dont ils attribuoient le secret à une femme juive [...]. Ces Juifs de l’Égypte dont je viens de

parler, et qu'on nommera comme on voudra, thérapeutes, allégoristes, enthousiastes, ascétiques, disparurent d'une manière qui nous est inconnue [...]".

¹² Patai, *The Jewish...*, assumes that, while the works of Gershom Scholem, Martin Buber and their pupils on Jewish mysticism and Hasidism succeeded in revealing the importance of these two aspects of Judaism, nothing comparable was done in the field of alchemy until the publication of his own monograph.

¹³ Moritz Steinschneider, "Typen", *Jeshurun. Zeitschrift für die Wissenschaft des Judenthums*, 9 (1873), 84: "Wir haben hier Nichts aus ältern hebräischen Quellen zu berichten, obwohl die Alchimisten ihre pseudoepigraphischen Schriften auf Mose und seine Schwester, welche als Maria die Koptin erscheint u.s.w. zurückdatieren. Die Juden verstanden sich auf die reelle Goldenwaage zu gut, um sich vom 'Stein der Weisen' zu Narren machen zu lassen".

¹⁴ This is the case, for instance, of Steinschneider's description of Ms. Orient. Klein 514 of the Staatsbibliothek, Berlin in: Moritz Steinschneider, *Die Handschriften-Verzeichnisse der Königlichen Bibliothek zu Berlin*, (Hildesheim – New York: G. Olms Verlag, 1980; repr. of the edition Berlin: Buchdruckerei der Königl. Akademie der Wissenschaften, 1878), II, 119-121.

¹⁵ Moritz Steinschneider, "Pseudo-Juden und Zweifelhafte Autoren", *Monatsschrift für Geschichte und Wissenschaft des Judenthums* 38 (1884): 39 ff.

¹⁶ Moses Gaster, "Alchemy", in *The Jewish Encyclopedia*, (New York: 1908), 328. Gaster expresses a position quite similar to the one of Steinschneider: "Traces of the connection of Jews with the science of alchemy are very scanty in Hebrew literature. Not a single distinguished adept is found who have left in Hebrew form traces of his knowledge of the subject".

¹⁷ Bernard Suler, "Alchemy", in *Encyclopaedia Judaica*, second edition, Fred Skolnik and Michael Berenbaum (eds), 22 vols (Farmington Hills – Jerusalem: Macmillan Library Reference – Keter Publishing House, 2007), I, 599-603. The voice alchemy appears to be an extended rewriting of the one in the first edition of the *Encyclopaedia* (Berlin: Verlag Eschkol, 1928-1934).

¹⁸ Joshua Trachtenberg, *Jewish Magic and Superstition. A Study in Folk Religion*, (first edition New York: Behrman's Jewish Book House, 1939; repr. New York: Atheneum, 1979), 304, note 1: "Some physicians, in their experiments with chemistry, probably dabbled in alchemy also, but this branch of the magical arts had in general very little currency among Jews. Steinschneider says that «Hebrew literature contains remarkably little material on this subject»; I have not found any reference to or directions for the practice of alchemy in the literary works produced in Northern Europe, although Jews were popularly believed to be adepts".

¹⁹ Gershom Scholem, *Alchemie und Kabbala*, (Breslau: Schatzky, 1925).

²⁰ Gad Freudenthal, review of *The Jewish Alchemists. A History and source book* by Raphael Patai, *Isis* 86 (1995): 318-9.

²¹ Tzvi Langermann, review of *The Jewish Alchemists. A History and source book* by Raphael Patai, *Journal of the American Oriental Society* 116 (1996): 792-3.

²² A preliminary and not published list of Genizah fragments with alchemical content was prepared by Gideon Bohak during his research on Jewish magic that lead to the recent publication of his *Ancient Jewish Magic. A History* (Cambridge,

UK: Cambridge University Press, 2008). Part of the Genizah fragments catalogued as “paramedical” or “recipes” in Haskell D. Isaacs and Colin F. Baker, *Medical and para-medical manuscripts in the Cambridge Genizah Collections*, (Cambridge, UK: Cambridge University Press, 1994) appears to preserve alchemical material. Research on the alchemical fragments in the Taylor-Schechter Genizah Collection is among the tasks of my current employment and my findings will hopefully be published shortly.

²³ Yosef Yinon (Fenton), “Rabbi Makhluḥ Amsalem. A Moroccan Alchemist and Kabbalist” (Heb.), *Pe’amim* 55 (1993): 93, note 3–4 (I am thankful to Professor Gad Freudenthal for this bibliographical reference). Patai, *The Jewish ...*, 370–1 provides the translation of another Genizah fragment preserved in Oxford (Ms Ox. Hebr. c. 55, cat. 2659.5) in which alchemical recipes for the purification and reddening of gold are described.

²⁴ Other evidence on the practice of alchemy by Jews can be found in Gerd Mentgen, “Jewish Alchemists in Central Europe in the Later Middle Ages: Some New Sources”, *Aleph* 9 (2009): 345–52.

²⁵ An exhaustive bibliography of Genizah studies would exceed the aim of this article. I will limit myself to the mention of the monumental work by Shelomo D. Goitein who, drawing from the evidence found in the Cairo Genizah, traced a vivid and detailed portrait of life in the Mediterranean basin during the Middle Ages and started a new season of Genizah studies: Shelomo D. Goitein, *A Mediterranean society: the Jewish communities of the Arab world as portrayed in the documents of the Cairo Genizah*, 6 vols, (Berkeley – Los Angeles – London: University of California Press – Cambridge University Press, 1967–1993); for a list of catalogues and publications of material from the Cairo Genizah, see Taylor-Schechter Genizah Research Unit, *Bibliography of the Genizah Collection*, www.lib.cam.ac.uk/Taylor-Schechter/Bibliography.html (accessed July 23, 2010).

²⁶ The distinction between different kinds of alchemy – a mystical, a theoretical, and a practical one – as held for instance by Sayyed Hossein Nasr, *Science and Civilization in Islam*, (Cambridge, MA: Harvard University Press, 1968) has been replaced by a less clear cut definition of different kinds of alchemical texts, as argued by Pierre Lory in *Jābir ibn Ḥayyān, Dix traités d'alchimie. Les dix premiers traités du Livre des soixante-dix*, (Paris: Sindbad, 1983), 17 and by Paola Carusi, “Alchimia ermetica e arte del vetro: il tadbīr Harmis Al-Ḥarāmisa”, *Quaderni di Studi Arabi* 10 (1992): 179–180.

²⁷ For the Arabic and the Hebrew versions of the *Liber de aluminibus et salibus*, see Gabriele Ferrario, “Origins and Transmission of the *Liber de aluminibus et salibus*”, in Lawrence Principe (ed.), *Chymists and Chymistry. Studies in the History of Alchemy and Early Modern Chymistry* (Sagamore Beach, MA: Watson Publishing International), 137–148; Id., “Il Libro degli allumi e dei sali: *status quaestionis* e prospettive di studio”, *Henoch* 26 (2004): 275–296. For the Latin translations of the treatise, see: Robert Steele, “Practical Chemistry in the 12th century. Rasis de aluminibus et salibus”, *Isis*, 12 (1929): 10–46; Julius Ruska, *Das Buch der Alaune und Salze: ein Grundwerk der spätlateinischen Alchimie*, (Berlin: Verlag Chemie, 1935; repr. Frankfurt am Main: Institute for the History of Arabic-

Islamic Science at the Johann Wolfgang Goethe University, 2002, 227-351) and C.J. Arbuthnott, “Pseudo Razi *de aluminibus et salibus*: a Critical Edition and Translation of the Latin Translation with notes on the Chemical Procedures”, (PhD diss., University of London – Birkbeck College, 2002).

²⁸ Steinschneider, *Handschriften-verzeichnisse...*, II, 119-121; Patai, *The Jewish...*, 119-124.

²⁹ Mošeh Šlomoh Delmedigo studied mathematics and astronomy in Padua (Galileo Galilei was among his teachers) and later devoted himself to medicine under the influence of Leone of Modena, rabbi of the Venetian Jewish community. In the second part of his life, Delmedigo travelled to Crete, Egypt, Turkey; he then moved to Vilna where he worked as a doctor, then to Frankfurt and he finally settled in Prague, where he died in 1655. The *Sefer Elim* collects the correspondence between Delmedigo and a friend of one of his pupils, Zerah ben Natan (or ben Nissim) of Troki (in today's Lithuania): in the book, Delmedigo's answers to Zerah's questions cover a huge range of topics such as astronomy, astrology, cabala, alchemy and occultism.

THE *DISPUTATIO SCOTI* FALSELY ATTRIBUTED TO MICHAEL SCOT (14TH CENTURY)

BENJAMIN FAURÉ,
UNIVERSITE DE TOULOUSE

In Latin editions, the *Disputatio Scoti* attributed to Michael Scot (c. 1175-1235/1236) appears under the title *Quaestio curiosa de natura solis et lunae*. This small treatise was originally part of a collection of alchemical texts printed in 1546 in Venice, the *Pretiosa margarita novella* of Janus Lacinius.¹ It was then taken up in 1622 in the fifth volume of Lazarus Zetzner's *Theatrum Chemicum*.² This edition is however a mere copy of the 1546 version. Lynn Thorndike and Pearl Kibre, in the *Catalogue of Incipits of Mediaeval Scientific Writings in Latin*, identified eight manuscripts of the *Disputatio Scoti*, to which I have added three more, along with four vernacular versions: one in Italian, one in English, one in Czech and one in German.³

The differences in the text between the editions and the manuscripts that I deem to be the least corrupted are relatively negligible and the logical progress of the *Disputatio Scoti* has been respected in the printed versions. But, on the other hand, certain parts of the work are not to be found in the Latin manuscripts (except in MS. Bologna 457/XXIV, which might be a mere copy of the Lacinius edition, or a model for this edition) : “*Opiniones de materia prima solis et luna*”, “*De reductione auri in materiam primam*”, “*Quare vocatur lapis*”, and “*Tertia pars*”. These titles form new parts which do not match the five divisions in the original text and therefore unbalance it.

In this short study, we will consider the content of the *Disputatio* attributed to Scot and comment on its peculiarity after having introduced the alchemist who wrote it and argued for our hypothesis on the supposed date of its writing.

1- Authorship

Since the Lacinius edition, the printed tradition has attributed this work to Michael Scot. The same attribution is found in four manuscripts as well. But since the attribution stems, in all of them, from a 16th century hand, it may be surmised either that those manuscripts actually relied on the Lacinius edition, or that at least one of them belonged to the family of (or even was) Lacinius' model. At any rate, this attribution does not appear in the oldest manuscripts that we know of. As a matter of fact, John Ferguson, Lynn Thorndike, Robert Halleux, and other scholars as well have pointed out that Michael Scot could not be possibly the actual author of the work.⁴ J. W. Brown particularly emphasizes the very scholastic style of the text, which does not match the style of the authentic works of Emperor Frederick II's astrologer.⁵ The main argument against the attribution of that text to Michael Scot is the references found in the *Disputatio* to Albertus Magnus' *De mineralibus* and Vincent of Beauvais' *Speculum maius* : these two works were written after 1250 (the first one around 1250-1254,⁶ and the second around 1260),⁷ while Michael Scot died around 1235 or 1236.⁸

In a manuscript from the beginning of the 16th century, the *Disputatio* was attributed to “*Doctor Subtilis*,” a nickname for the Scottish Franciscan philosopher John Duns Scotus (1266-1308), even though Duns Scotus was never properly mentioned in that text. Now Duns Scotus dealt with alchemy indeed in some parts of his writings, and him were even expressly ascribed some alchemical treatises. In some pages witnessing his knowledge of alchemy, Duns Scotus even showed his consideration for “the doctors in alchemy” (as he calls them in the *De rerum principio*).⁹ However, he seems to have opposed St Augustine's theory on seminal reasons : he felt Augustine's doctrine inconsistent in many respects.¹⁰ Since it is this very theory of seminal reasons which forms the core of the *Disputatio*, it proves difficult that the *Disputatio* may have ever been written by Duns Scotus.

Though the *Disputatio* remained anonymous in four of the older manuscripts, the alchemist who composed this work could just be a homonym of Scot. Such a hypothesis would explain the false attributions and the confusion around this treatise. In that case, the name of Scot would not be the conscious choice of an author who sought to link his work to an authority such as Michael Scot or Duns Scotus. Furthermore, other alchemical treatises bear the name of Scot, and identifying their authors is more often than not a source of considerable difficulties.¹¹

Finally, the style of the *Disputatio Scoti* is very much the style of the

scholastic *quaestio* (a question first followed by some negative arguments, and then by their refutations), and its author sometimes uses specific scholastic vocabulary (e.g. “*transumptive*”, “*anthonomastice*”). Thus it becomes obvious that the *Disputatio* must be ascribed to an author who had acquired a real academic background. Nothing should even prevent us from thinking that this author could have been a doctor or a master from some university.

2- Date of composition

The latest authority referred to in the *Disputatio* is the *Summa perfectionis* by pseudo-Geber, which was written at the end of the 13th century.¹² Among the quoted sources of the *Disputatio*, we predominantly find twelfth and thirteenth-century works (*De aluminibus et salibus*, the *Tabula smaragdina*, *De mineralibus* by Albertus Magnus, the *Speculum naturale* by Vincent de Beauvais...). Furthermore, Scot never mentions neither Arnald of Villanova¹³, nor John of Rupescissa¹⁴ (the latter wrote his *De consideratione quintae essentiae* around 1350-1352), both of whom being authorities that cannot be ignored in respect of the themes addressed to in the *Disputatio* (such as the making of artificial gold and its medical use). As a result, it seems reasonable to consider that this treatise was written in the first half of the 14th century.

3- An alchemy based on *rationes seminales*

The author of the *Disputatio Scoti* is particularly interested in the making of artificial gold ; the beginning of the treatise reads : “*Queritur utrum artificialiter possit fieri verum aurum aut non*”. An argumentation opposed to alchemy is provided in the introduction, using such arguments as the appropriate place for the generation of gold and silver, the substantial form, the heat of the sun. Then the author asks “whether of any mineral such as gold or silver may any seminal virtue be artificially produced which can instantly harden mercury as hard as gold.”¹⁵ This sentence introduces the key idea, which is largely explained in the treatise : the making of artificial gold with the help of a seminal virtue or seminal reasons (called in Latin *virtus seminativa*, or more often found in its plural form *rationes seminarias* or *rationes seminales*). Scot takes great care to explain how obtaining this virtue and how using it for the making of gold. The text is divided into five parts. The first three parts are about the seminal virtue, the way to obtain it, its use and action on matter with the aim to produce artificial gold as good as the natural one. The fourth part

adds some details about the operations and redirects the main theme towards medical alchemy. The fifth part begins with a few lines summarizing the work and addresses the medical virtues of gold.

The author of the *Disputatio* borrows the concept of seminal reasons from Augustine and quotes him in the first part of the treatise:

Circa primum sciendum est quod talis virtus seminativa convenientius elici potest ex auro, quod probatur per beatum Augustinum super [Genesi], ubi dicit : insunt enim rebus corporeis omnia mundi elementa, quedam occulte seminarie rationes, quibus cum data fuerit oportunitas causalis atque temporalis prorumpunt in causas debitas et species suis modis et finibus. Et sicut non dicuntur [angeli] [qui] ista faciunt, [animalium] creatores, sic nec agricolae segetum vel quorumcumque in terra gignentium creatores dicendi sunt quamvis noverint prebere quasdam visibiles oportunitates et causas ut illa nascantur. Deus vero unus solus creator est qui causas ipsas seminarias et rationes [rebus] inseruit. Hoc idem in libro de Civitate Dei et transumptive in capitulo 26, questione quinta. Nec mirum.¹⁶

Theoretically, seminal reasons exist in all things and act directly on matter. In the *De Genesi ad litteram*, St Augustine used seminal reasons to explain that all beings to be ever created have already been created altogether at the very moment of Creation : they have been created in a material form, but just as hidden seeds (the *rationes seminales*). The seeds of all existing things carry in themselves these seminal reasons which have been transmitted from the beginning of time. This tenet allowed the theologian to claim that God is responsible for all beings created in the lower world.¹⁷ In the XIIIth and XIVth centuries, many thinkers took up the concept of “seminal reasons” in discussions about the generation of life, the connections between form and matter, and above all, about the power of evil. The seminal reasons allowed St Augustine and his followers to explain the origin of the power of demons.¹⁸ According to those thinkers, the demons would, in their activities, tamper with the seeds arranged in nature by God. As for the *Disputatio*, Scot teaches the alchemist who aims to make gold by manipulating the seminal virtue, that this virtue ought to be extracted from the “sun”, i.e. from gold.

Scot adds some new arguments to the Augustinian idea of seminal reasons by applying it to alchemy. According to Scot (and to St Augustine as well), the seminal reasons are spirits, since they are active virtues. Scot adds that those virtues, to be able to produce gold, must be mercurial. As a matter of fact, the author of the *Disputatio* evokes then the “mercury alone” theory, borrowed from pseudo-Geber's *Summa perfectionis magisterii*, according to which only mercury makes possible the perfection of metals. Scot frequently insists on the importance of mercury.¹⁹

Nevertheless, he rejects pseudo-Geber's theory on the first matter of gold which is composed by mercury alone.²⁰ Scot prefers the Avicennian theory (attributed to Aristotle) according to which metals are produced by an exhalation that has the dual nature of sulfur and mercury²¹. Thus, when the author of the *Disputatio* describes the reduction of gold into its first matter, he makes clear that the alchemist must obtain a vaporous substance²². In spite of this disagreement with pseudo-Geber, the influence of the *Summa perfectionis* on Scot's alchemy is quite clear. Indeed, throughout the *Disputatio*, a specific power is granted to mercury in its action on matter : if seminal reasons (or active virtues), once introduced into the first matter of gold, can generate and increase the precious metal, it is due to their mercurial nature²³.

In the last two parts of his treatise, Scot deals with medical alchemy and he uses for the first time the word “elixir”. In the *Disputatio*, the elixir designates the “stone”, that is the matter coagulated by the alchemist during the latest operations (the stone is white or red according to the quantity of mercury that it contains).²⁴ As in John of Rupescissa's *De consideratione quintae essentiae* and pseudo-Lull's *Testamentum*, the elixir is a medicine for the human body, able to cure all the diseases and to preserve youth. Scot adds that this remedy can be taken with food or drink.²⁵ Furthermore, the elixir is prepared from gold, which explains why, at the end of the *Disputatio*, Scot seeks to understand the reasons for the medicinal properties of gold. He mentions the species of gold and states, according to his theory, that gold cures and “*cor confortat*” because of the divine virtue (the seminal virtue) that acts on the passive principles of all things.²⁶

4- The *Disputatio Scoti* re-historicized

It is worth noting how far the *Disputatio Scoti* fits into the historical and scientific context of the first half of the XIVth century. That period is characterized by a rather frequent use of gold in trade as well as in coinage.²⁷ Now, at some time before 1335 — a time that we deem to be contemporary to the redaction of the *Disputatio* —, the canon lawyer Oldrado da Ponte wrote the *Consilium* 74, an account on the legality of alchemy that mentions seminal reasons.²⁸ Oldrado quoted St Augustine and explained that the *rationes seminae*, the base of alchemical operations, were considered by the alchemists themselves not to be of an evil, but indeed of a divine essence. The *Disputatio Scoti* could reflect such a discussion, if it is not Oldrado who reflects himself such alchemical thoughts on seminal reasons as those expressed in the *Disputatio*.

Furthermore, it is during that time that medicine gained a greater recognition in universities; its teaching grew up, and more practical experiences and theories were developed in its field. As a result, medicine took up more space, too, in the field of alchemy.²⁹ The medical considerations exposed in the *Disputatio Scoti* witness this evolution, too.

Index of the manuscripts of the *Disputatio Scoti*

1. Bologna, Biblioteca Universitaria, ms. 153 (lat. 164), XIVth or XVth century, f. 121r-124v (Latin). Author : *Scoti*. Title : *Disputatio Scoti super arte alkimie*.³⁰
2. Paris, BNF, ms. lat. 11202, XVth century, f. 36r-45v (Latin). Author : *Scoti*. Title : *Disputacio Scoti de opere lapidis philosophie*.³¹
3. Paris, BNF, ms lat. 14006, XVth century, f. 90r-96r (Latin). Author : *Scotto* (this name seems to have been written by the same hand as the main text), corrected by a late hand, *Michaelis Scotti*. No title.³²
4. Klagenfurt, Bischöfliche Bibliothek, ms. XXX d 6, XVth century, f. 54r-61v (Latin). Author : anonymous. No title. Incomplete text.³³
5. Nelahozeves, Roudnice Lobkowitz Library (Nelahozeves Castle), ms. VI Fd 26, XVth century, f. 100-112 (Latin). Author : anonymous. Title : *Questio curiosa de natura solis et lune*.³⁴
6. Wien, Österreichische Nationalbibliothek, ms. 5510, XVth or XVIth century, f. 122r-124v (Latin). Author : anonymous. No title (the catalogue gives the title *Disquisitio alchymica*).³⁵
7. München, Bayerische Staatsbibliothek, clm 26059, XVIth century (1507-1508), f. 109r-119v (Latin). Author : anonymous. No title.³⁶
8. Leiden, Universiteitsbibliotheek, ms. Voss. Chym. Q 33, XVIth century (1533 or before), f. 25r-28v (Latin). Author : *doctore subtili*. Title : *Incipit unus parvus tractatus questionarius super lapidis philosophorum compositiione, editus a doctore subtili*. Incomplete text.³⁷
9. Lyon, Bibliothèque de la Ville, ms. 317 (253), XVIth century (1556), f. 32r-38r (Latin). Author : *Scotus*. Title : *Scotus super arte divina*.³⁸

10. Bologna, Biblioteca Universitaria, ms. 457 (lat. 270), b. XXIV, fasc. 2, XVIth century, f. 104r-112v (Latin). Author : *Michaele Scoto*. Title : *Questio curiosa de natura solis et lune ex Michaele Scoto*.³⁹

11. Firenze, Biblioteca Riccardiana, ms. 923, XVIth century, f. 119r-126v or f. 116r-123v (Latin). Author : *Scoti*. Title : *Scoti philosophi Questiones, An ars alchimia Aurum vel Argentum generare, aut multiplicare possit*.⁴⁰

12. Chantilly, Musée Condé, ms. 419 (919), XVIth century, f. 1r-9r (Italian). Author : called “*excellente Schoto*” in the title and *Scotto* by a late hand in the index of the manuscript. Title : *De l'excellente Schoto l'opera preclara che contiene la vera e probata philosophia ne la transmutatione de li metalli* (the title in the index is *La question di Scotto*).⁴¹

13. London, British Library, Sloane 320, XVIth century, f. 123r-125v (English). Author : *Michaell Skott*. Title : *Michael Skott's questionarie*.⁴²

14. Leiden, Universiteitsbibliotheek, ms. Voss. Chym. F 3 (*Kniha Dokonalého Vmieni Chymického*), XVIth century (1582-1585), f. 210r-216v (Czech). Author : *Michael Scotus*. Title : *Michael Scotus, De sole et luna*.⁴³

15. Wolfenbüttel, Herzog-August-Bibliothek, ms. 183 Blankenburg, XVIIth century (dated March 15, 1634 f. 129v, and signed by Paulus Zazerius), f. 122r-129v (German). Author : *Michael Scoto*. Title : *Ein Frag von der Natur Sollis et Lunae auß Michael Scoto*.⁴⁴

Notes

¹ (Pseudo-) Michael Scot, *Quaestio curiosa de natura Solis et Lunae*, in Janus Lacinius (ed.), *Pretiosa Margarita Novella de Thesauro, Ac Pretiosissimo Philosophorum Lapide*, Venice, 1546, f. 195r-202r.

² (Pseudo-) Michael Scot, *Quaestio curiosa de natura Solis et Lunae*, in *Theatrum Chemicum*, vol. V (Strasbourg : Zetzner, 1622), 795-805.

³ See the index at the end of this article.

⁴ John Ferguson, *Bibliotheca chemica, a catalogue of the alchemical, chemical and pharmaceutical books* (Glasgow: James Maclehose & Sons, 1906), t. II, 357 ; Lynn Thorndike, *A History of Magic and Experimental Science*, vol. II, (New York : Columbia University Press, 1929), 334 ; Robert Halleux, *Les Textes alchimiques* (Turnhout, Brepols, 1979), 100.

⁵ John Wood Brown, *The life and legend of Michael Scot* (Edimbourg: 1897), 77.

⁶ Dorothy Wyckoff, *Albertus Magnus : Book of Minerals* (Oxford, Clarendon Press, 1967), XXXV-XLI.

⁷ Monique Paulmier-Foucart, “Vincent de Beauvais”, in C. Gauvard, A. de Libera, M. Zink, eds., *Dictionnaire du Moyen Âge* (Paris, Quadrige, PUF, 2002), 1455-6.

⁸ Lynn Thorndike, op. cit. vol. II, 308-9.

⁹ In *De rerum principio*, Duns Scot deals with themes pertaining to alchemy as he asks : “*An lapides et metalla vivant ?*” He writes for instance about the four humors included in all natural products, such as stones and metals (“*Secundo, ostendo quod omne productum a natura, hoc est, omne compositum, saltem in virtute, continet quatuor elementa. Quoad hoc primo possunt induci auctoritates doctorum alchymiae, qui ostendunt in quolibet a natura producto esse quatuor humores vel aliquid eis proportionatum, scilicet sanguinem, phlegma, choleram et melancholiam.*”). To support his assertions, he quotes Avicenna “*in libro de majori alchymia*” and “*diversis libris alchymistarum*”, who evoked the names of the humors contained in minerals and metals (“*Hoc eodem experimento utitur Avicenna in libro de majori alchymia, ubi dicit quod lac de se resolvitur in serum, quod est eius phlegma ; in butyrum quod est ejus sanguis ; in substantiam grossam, ut est caseus, quae est ejus melancholia, et remanet cholera, quae per ebullitionem evanescit. Ex his patet, in lacte et sanguine humano, quemlibet dictorum quatuor esse humorum [...]* Alii nominant illos humores in metallis per quatuor aetates : nam sanguinem vocant pueritiam, choleram juventutem, phlegma senium, melancholiam senectutem. Et dicunt quod pueritia et senectus istorum, vel illorum metallorum conveniunt bene, vel non bene : et ista omnia patent in diversis libris alchymistarum.”). Duns Scotus does not write anything really conclusive on alchemy and the verisimilitude of its practice, but he knows about the intentions of alchemists, refers to them as true authorities (“doctors in alchemy”) and finds in alchemical literature some ideas that could support his theories on natural philosophy. There is no doubt that Duns Scotus held alchemy in high regard. Johannes Duns Scotus, *Quaestiones Meteorologicae, De rerum principio, De primo rerum omnium principio*, in *Opera omnia, ed. nova*, t. IV, (Paris: 1892), *Quaestio X*, art. III, 444-445. On Duns Scotus and alchemy: Lynn Thorndike, op. cit. vol. III, 1934, 8; Claus Priesner, “Duns Scot, Johannes”, in Claus Priesner and Karin Figala, *Alchemie, Lexikon einer hermetischen Wissenschaft* (Munich: C. H. Beck, 1998), 116-118.

¹⁰ Bernard Landry, *La philosophie de Duns Scot*, Thèse pour le Doctorat, Faculté des Lettres de l’Université de Paris (Paris : Firmin-Didot, 1922), chap. III, Les formes substantielles, 66-71 ; Emile Bréhier, *La Philosophie au Moyen Âge* (Paris : Albin Michel, 1937), 332.

¹¹ For instance, MS. Bologna 457/xxiv not only includes the *Disputatio Scoti*, but also three texts expressly attributed to Duns Scotus (*Domine vobiscum, Tractatus ad Regem Anglie, Tractatus super lapide philosophico*), whereas three more texts in the same manuscript were attributed to Master Pierre de Dons (*Tractatus primus operis magni tam ad album quam rubeum, Tractatus secundus operis, and De veritate et virtute lapidis philosophorum*).

¹² William R. Newman, *The “Summa perfectionis” of Pseudo-Geber, A critical*

Edition, Translation and Study (Leyde: E. J. Brill, 1991), 100-1.

¹³ For a broader view on Arnaud de Villeneuve and his possible activity as an alchemist: Antoine Calvet, “L’alchimie d’Arnaud de Villeneuve”, in *Terres médiévales*, Paris, 1990, 21-34 and by the same author: “Mutations de l’alchimie médicale au XV^e siècle. A propos des textes authentiques et apocryphes d’Arnaud de Villeneuve”, *Micrologus*. 3, *La Crisi dell’Alchimia / The Crisis of Alchemy* (excerpt of a conference in Lausanne, on Nov. 8-10, 1993), 1995, 185-209 ; Michela Pereira, “Arnaldo da Villanova e l’alchimia, Un’indagine preliminare,” in *Actes de la 1^{re} Trobada Internacional d’Estudis sobre Arnau de Vilanova*, vol. 2 (Barcelona: Josep Perarnau, 1995), 95-174.

¹⁴ Robert Halleux, “Les ouvrages alchimiques de Jean de Rupescissa”, in *Histoire littéraire de la France*, t. XLI (Paris : Imprimerie Nationale, 1981), 272-3.

¹⁵ *Disputatio Scoti* : « *utrum ex aliquo minerali puta [sole vel luna] possit aliqua virtus seminata artificialiter procreari que statim et in momento mercurium induret usque ad duritiem solis* ». All quotes of the *Disputatio Scoti* are excerpted from the critical edition which I gave in my doctoral thesis. See in the *Theatrum Chemicum*, vol. V, p. 795.

¹⁶ This passage does not stem from the commentary on *Genesis*, nor from the *De civitate Dei*, both quoted by Scot. It is an extract from the *Quaestiones in Exodum* which are found in the *Quaestionum in Heptateuchum libri VII* of St Augustine. See St Augustine, *Quaestionum in Heptateuchum, libri VII* (Turnhout: Brepols, 1958), Book II, chapter 21 (7, 12). Scot cites another reference in which the passage “*insunt enim rebus corporeis...*” is literally reproduced, the *Decretum Gratiani* « *in capitulo 26, questione quinta. Nec mirum* ». See Aemilius Ludovicus Richter, “Decretum Gratiani emendatum et notationibus illustratum,” in Jacques-Paul Migne, *Patrologiae Latinae*, t. 187 (Brepols, 1995) (original ed. 1855), Cause XXVI, Question V, Canon XIV, « *Que magorum prestigiis fiunt non vera, sed fantastica esse probantur* », col. 1034.

¹⁷ Etienne Gilson, *Introduction à l’étude de Saint Augustin* (Paris : J. Vrin, 1969), 269-71 ; John B. Brady, “Saint Augustine’s Theory of Seminal Reasons,” *The New Scholasticism* 38 (1964) : 142-3.

¹⁸ Maaïke van der Lugt, *Le Ver, le Démon et la Vierge, Les théories médiévales de la génération extraordinaire* (Paris : Les Belles Lettres, 2004), 135-136.

¹⁹ Thus at the end of the first part of the *Disputatio* (*Theatrum Chemicum*, vol. V, p. 796) : “*Ad hec autem omnia in mercurio si ibi [inciperet] pervenire [posset] cum suffragio ignis et ingenii quod est laboris copia*”.

²⁰ *Ibid.* (p. 797) : “*Alii dixerunt, quod prima materia omnium metallorum [est] solus mercurius quia in eo sunt sulphuree partes admixte secundum Geberum. Et illud non videtur esse verum, quia ubi est minera mercurii ibi numquam est sol.*”

²¹ This theory was found in the sections of Avicenna’s *Kitāb al-Šifā’* (ca. 1020-1027) that Alfred of Sareshel translated into Latin before 1200 and appended, under Aristotle’s name, at the end of the fourth book of Aristotle’s *Meteorologica*. See Erik J. Holmyard and Desmond Christopher Mandeville, *Avicennae, De congelatione et conglutinatione lapidum, being sections of the Kitāb al-Šifā’*. *The Latin and Arabic texts edited with an English Translation of the latter and with*

critical notes (Paris : P. Geuthner, 1927) ; Jean-Marc Mandosio and Carla di Martino, “La ‘Météorologie’ d’Avicenne (*Kitāb al-Šifā’* V) et sa diffusion dans le monde latin,” in Andreas Speer and Lydia Wegener, eds., *Wissen über Grenzen. Arabisches Wissen und lateinisches Mittelalter* (Berlin-New York : W. de Gruyter, 2006), 406-24.

²² *Disputatio Scoti (Theatrum Chemicum, vol. V, p. 799)* : “*Redit ergo aurum ad suam radicem, id est naturam vaporis. Et hec dicitur materia prima solis*”.

²³ *Ibid.*, (p. 797) : “*Quantum ad secundum sciendum quod philosophi videntes naturam mercurialem purissimam fixam et fluxibilem ingredi et non perficere in stupore deducti sunt, ita quod a pluribus ars negaretur. Aliqui tamen prudentius considerantes ex principiis phylosophie quod nichil generat nisi nutriatur, quia virtus generativa superflua est alimenti, [arbitrati] sunt in auro virtutem [nutritivam] aliquid inserere ut sic suo modo pullulet et germinet. Hoc autem nichil aliud est quam ipsas seminarias rationes in virtutes radicum activare*”.

²⁴ *Ibid.*, (p. 803) : “*Et non differt lapis albus a rubeo nisi ex additione citrinantis coloris qui etiam a mercurio solo recipitur*”.

²⁵ *Ibid.*, (p. 804) : “*Verbi gracia si istius elixiris quantitatem grani cum vino aliquo claro miscueris lepram sanat, scabiem, [omnem] impetiginem, omnem febrem et calorem tollit, incontinenti omnem corruptum humorem de corpore humano evellit, omnem membrum contractum erigit, juventutem conservat. Quid plura ? Nullus qui hoc usus fuerit in cibo vel potu infirmitatem aliquam aliquo tempore cognoscit. Semper erit letus et rubicundus*”.

²⁶ *Ibid.*, (p. 805) : “*Et sic virtus totius speciei est secundum virtutem principiorum. Sic quod sit prius ratione virtutis a celo influxe, [quia] virtus [celi] communis est, et influit in patiente disposito semper et ubique*”.

²⁷ Peter Spufford, *Money and its use in medieval Europe* (Cambridge: University Press, 2004).

²⁸ Francesco Migliorino, “Alchimia lecita e illecita nel Trecento, Oldrado da Ponte,” *Quaderni Medievali*. 11 (1981): 6-41.

²⁹ Antoine Calvet, “Mutations de l’alchimie médicale au XV^e siècle. À propos des textes authentiques et apocryphes d’Arnaud de Villeneuve,” *Micrologus* 3 (1995): 185-209 ; Chiara Crisciani, “Medici e alchimia nel secolo XIV : dati e problemi di una ricerca,” in *Atti del congresso internazionale su medicina medievale e scuola medica salernitana (1993)* (Salerno: Centro Studi Medicina « Civitas Hippocratica, 1994), 102-18 ; Chiara Crisciani, A. Paravicini Bagliani eds., *Alchimia e medicina nel Medioevo* (Florence: Sismel, ed. del Galuzzo, 2003).

³⁰ Ludovico Frati, “Indice dei codici italiani conservati nella R. Biblioteca Universitaria di Bologna,” *Studi italiani di filologia classica*. XVI (1908): 170 ; Lynn Thorndike and Pierre Kibre, *A Catalogue of Incipits of Mediaeval Scientific Writings in Latin* (Cambridge (Massachusetts): The Mediaeval Academy of America, 1963), col. 1632.

³¹ Jean Corbett, *Catalogue des manuscrits alchimiques latins*, t. I, *Manuscrits des bibliothèques publiques de Paris* (Bruxelles, 1939), 150, n° 47 ; Lynn Thorndike and Pierre Kibre, *op. cit.*, col. 1669.

³² Jean Corbett, *op. cit.*, t. I, p. 182, n° 53 ; Lynn Thorndike and Pierre Kibre, *op.*

cit., col. 1661.

³³ H. Menhardt, *Handschriftenverzeichnis der Kärntner Bibliotheken*, Bd. I : *Klagenfurt, Maria Saal, Friesach* (Wien, 1927), 49-50 ; Lynn Thorndike and Pierre Kibre, *op. cit.*, col. 1669.

³⁴ Chiara Crisiziani and Michela Pereira, “*Aurora consurgens* : un dossier aperto”, in *Natura, scienze e società medievali : studi in onore di Agostino Paravicini Bagliani*, Claudio Leonardi and Francesco Santi eds. (Firenze : SISMELE, Ed. del Galluzzo, 2008), 148.

³⁵ *Tabulae codicum manu scriptorum praeter graecos et orientales in Bibliotheca Palatina Vindobonensi asservatorum*, ed. Academia Caesarea Vindobonensis, t. IV, Cod. 5001 - Cod. 6500 (Wien: Gerold, 1864-1899) ; Lynn Thorndike and Pierre Kibre, *op. cit.*, col. 1661.

³⁶ Carl Felix Halm and G. Meyer, *Catalogus codicum latinorum Bibliothecae Regiae Monacensis secundum Andrea Schmelleri Indices composuerunt Carolus Halm et Guglielmus Meyer*, Munich, ed. altera emendatio, 1881, t. II, pars IV, *codices num.* 21406-27268, n° 1807 ; Lynn Thorndike and Pierre Kibre, *op. cit.*, col. 1632.

³⁷ Peter C. Boeren, *Codices Vossiani Chymici* (Leiden, Universitaire Pers Leiden, 1975), 186.

³⁸ *Catalogue général des manuscrits des bibliothèques publiques de France*, t. XXX (Lyon), (Paris, 1900), 72-74 ; Jean Corbett, *Catalogue des manuscrits alchimiques latins*, t. II : *Manuscrits des bibliothèques publiques des départements français antérieurs au XVIII^e siècle*, Bruxelles, 1951, p. 71, n° 22 ; Lynn Thorndike and Pierre Kibre, *op. cit.*, col. 1661 (the authors give the title *Scoti philosophi questiones* and the shelfmark 317-293 instead of 317-253).

³⁹ This text does not appear in the catalogues of the Library. The *Dominus vobiscum*, which is the first text in the manuscript (inc. “*Univerſa mundi machina in duas dividitur partes*”), is the only one explicitly mentioned. The *Dominus vobiscum* and “*alia opuscula*” are mentioned under the shelfmark 270 (457) in Ludovico Frati, *op. cit.*, 213 and 216 ; Lynn Thorndike and Pierre Kibre, *op. cit.*, col. 1602, and Pierre Kibre, “Further addenda and corrigenda to the revised edition of Lynn Thorndike and Pearl Kibre, *A Catalogue of Incipits of Mediaeval Scientific Writings in Latin*, 1963”, *Speculum*, XLIII (1968) : 106, n° 1602.

⁴⁰ Atanasio Lopez, “*Descriptio codicum Franciscanorum Bibliothecae Riccardianae Florentinae*”, *Archivum Franciscanum Historicum* III (1910) : 554-5 ; Lynn Thorndike and Pierre Kibre, *op. cit.*, col. 1661.

⁴¹ Chantilly, *Le Cabinet des Livres, Manuscrits*, t. I : *Théologie, Jurisprudence, Sciences et Arts*, Paris, Plon, 1900, p. 332 ; Jean Corbett, *op. cit.*, t. II, p. 61, n° 17.

⁴² Edward J. L. Scott, M. A. D. Litt, *Index to the Sloane manuscripts in the British Museum* (London: British Museum, 1904), 482.

⁴³ Pierre C. Boeren, *op. cit.*, 10.

⁴⁴ Hans Butzmann, *Die Blankenburger Handschriften (Kataloge der Herzog-August-Bibliothek Wolfenbüttel)*, vol. XI (Frankfurt-am-Main, 1966) 179. According to Butzmann, this manuscript was copied in Nuremberg and could be a mere German translation of the *Pretiosa margarita novella* of Janus Lacinius.

LA THÉORIE *PER MINIMA* DANS LES TEXTES ALCHIMIQUES DES XIV^E ET XV^E SIÈCLES

ANTOINE CALVET,
INDEPENDENT SCHOLAR (PARIS)

Les *minima* avant Geber

L'histoire de la formule latine *per minima* commence au XII^e siècle. La définition qu'en livre le *Pantegni* et qui s'impose aux médecins de Salerne est la suivante : « l'élément est la particule la plus petite et la plus simple »¹.

Cette définition inspirée de Galien signifie non pas que cette « plus petite partie » est un atome (indivisible), mais qu'elle est ce qu'il y a de plus petit et de plus simple de « ce qui est élément ». Élément est ici à prendre non au sens de l'un des quatre éléments mais comme un pur concept de l'esprit².

La définition du *Pantegni* n'est pas toujours acceptée. Certains auteurs (Némésius, Constantin, Guillaume de Conches) en défendent d'autres³.

Le concept de *per minima* est lié à celui de *mixtio* (mélange). Le *Pantegni* rappelle par exemple que la *complexio* résulte de la *mixtio* ou *commixtio* des quatre éléments. En effet, la *mixtio* se définit le plus souvent comme « l'union des miscibles conjoints par les *minima* », c'est-à-dire que « l'union *per minima* » devient nécessaire à un mélange total et intime. Cette idée s'écarte quelque peu de ce que théorisa Aristote dans le *De generatione et corruptione*, ce dernier n'ayant jamais dit expressément qu'un mélange parfait supposait à chaque fois l'union *per minima*, bien qu'elle le facilitât. Son exacte définition du mélange parfait ne requiert pas de particules⁴.

Urso de Salerne, un auteur important du milieu du XII^e siècle, avance une théorie originale des éléments en en distinguant douze au lieu de quatre, chacun des quatre éléments contenant un élément supérieur, un élément médian et un élément inférieur, en sorte que ces douze éléments forment une chaîne du « feu supérieur » à la « terre inférieure ». La thèse d'Urso séduisit Hermann de Carinthie qui, d'autre part, avec Robert de

Chester, introduisit la thématique de l'alchimie dans le monde savant du moyen âge⁵. Or, c'est justement dans ce domaine que la notion de « *mixtio per minima* » trouva à se développer de manière originale.

***Les minima dans la Summa perfectionis magisterii* du pseudo-Geber**

William Newman, dans plusieurs travaux, a tenté de rendre compte de la théorie *per minima* qui, dans la *Summa perfectionis magisterii* du Geber latin (peut-être Paul de Tarente), avec les thèses du mercure seul, des trois médecines et son prologue moral, constitue l'une des quatre innovations de cette somme alchimique du XIII^e siècle⁶. Dans son introduction à l'édition de la *Summa*, Newman évoque « une théorie corpusculaire de la matière » à l'œuvre dans ce texte alchimique, mais qui n'entretient, précise-t-il, qu'un rapport fort éloigné avec l'atomisme antique où les atomes sont des éléments indivisibles⁷. Geber formule cette théorie, entre autres, dans le chap. 24 de la *Summa perfectionis* : « pour une mixtion de ce genre [celle de l'eau et de la matière des métaux, rendue soluble, dans les entrailles de la terre], tous les éléments adviennent selon la proportion naturelle qui leur est échue, et ils se mélangent par les plus petites parties (*per minima*) jusqu'à ce qu'ils forment un mélange uniforme (*uniformem mixtionem*), une mixtion qui, par l'effet des coctions successives dans la mine, s'épaissit et se durcit pour faire le métal »⁸. Il revient là-dessus dans d'autres chapitres (chap. 9 et 28). Il en déduit, entre autres, que l'or, le métal le plus accompli, est composé des plus petites particules du soufre et du mercure, si menues qu'elles ne laissent que très peu d'espace entre elles : l'or est un exemple parfait d'*uniformitas substantie*. Selon Newman, l'hypothèse gébérienne des *minima* se confirme dans l'exemple de la *sublimatio*, dans la mesure où cette opération révèle à l'alchimiste la structure corpusculaire du mercure et du soufre⁹. Le rôle de l'alchimiste consiste donc à reconstituer au laboratoire une « substance uniforme » ou « composition très solide » (*fortissima compositio*) en réalisant une *mixtio* durable de l'humide et du sec de façon à obtenir une substance « homéomère dans toutes ses particules ». Les mots importants de cette thèse « omniprésente » dans la *Summa perfectionis magisterii* (Newman) sont donc *minima*, *uniformis substantia*, *fortissima compositio*, *pars* traduit par « particule », de même que *subtilis* y prend le sens de « petit » et *grossus*, celui de « grand » : *grossa substantia* est « une substance faite de larges particules », *mediocris substantia* une « substance faite de particules moyennes ». Dans *Atoms and Alchemy* (2006), Newman, revenant sur la notion de *fortissima compositio*, précise son idée. Contrairement à Aristote, pour Geber, partisan de la pluralité des formes, une substance

homéomère n'est pas un mélange uniforme mais une juxtaposition de particules non transformables dont la taille (des plus petites aux plus grosses) donne sa forme au composé. Ainsi, l'or, fait de multiples et minuscules particules de mercure et de soufre, s'amalgame d'autant plus aisément au mercure pur¹⁰.

La thèse défendue par Newman est quelque peu mise à mal par Barbara Obrist. Elle conteste en effet qu'on puisse parler de théorie corpusculaire dès lors que la source de la thèse gébérienne reste la conception aristotélicienne du mélange total. Elle confronte la traduction de Newman à celle de Darmstaedter¹¹ qui fait disparaître toute interprétation de type corpusculaire. Elle appelle à une plus grande attention aux termes comme *pars* et au rapport de la *Summa* avec le *De generatione et corruptione* et les *Météorologiques* d'Aristote, et avec le *De mineralibus* d'Albert¹².

Notre projet n'est pas de résoudre la question qu'elle pose, mais d'examiner le devenir tangible des idées gébériennes dans quelques textes alchimiques essentiels des XIV^e et XV^e siècles. On commencera par le corpus du pseudo-Arnaud de Villeneuve¹³ et surtout par l'analyse du *Rosarius philosophorum*, qui nous a semblé le texte le plus proche de la *Summa perfectionis* et dont l'influence sera déterminante. Puis nous proposerons d'analyser le corpus du pseudo-Albert le Grand, en partie tributaire de la *Summa*. Ces corpus transmettent des textes du XIV^e siècle dont certains appartiennent à la première génération d'écrits liés à la *Summa*. Les autres textes que nous étudions (le *Rosarius* de Dastin, le *Testamentum* et le *De secretis naturæ sive de quinta essentia* du pseudo-Lulle, la *Margarita pretiosa novella* de Petrus Bonus, la *Responsio* de Bernard de Trèves et la *Correctio fatuorum* attribuée à Richard l'Anglais) représentent un deuxième groupe de traités alchimiques, plus autonomes, dont le lien avec les idées gébériennes est patent, ou qui, quand celles-ci en sont absentes, en marquent l'évolution. Nous verrons ensuite leur impact dans la littérature des recettes.

Le corpus du pseudo-Arnaud de Villeneuve

Rosarius philosophorum

Le *Rosarius* est une compilation de textes alchimiques du XIII^e siècle¹⁴. Les traités des pseudo-Avicenne, pseudo-Aristote, pseudo-Bacon et la *Summa perfectionis magisterii* de Geber constituent l'essentiel des matériaux que le maître du *Rosarius* a mis en forme.

Les idées de la *Summa*, caractérisées par l'emploi d'un vocabulaire explicite, se retrouvent dans le *Rosarius*. Dans sa première partie, la *Theorica*, elles sont mentionnées à quatre reprises. Au chap. IV, le mercure

est décrit comme étant d'une « très forte composition et de nature uniforme » (*fortissima compositio et nature uniformis*), un peu plus loin, ce sont des passages entiers de la *Summa* qui sont repris. Au chap. VI de la *Theorica*, le maître du *Rosarius* définit la transmutation comme une imprégnation « par les plus petites parties » de l'élixir projeté sur un métal noble. Il rapporte exactement ce que théorisa Geber :

Donc, [écrit-il], il est nécessaire de réunir la médecine aux corps convenant le mieux à sa nature. De là vient qu'il faut que cette même médecine convienne en nature à ces derniers et qu'au plus profond elle forme avec eux un tout cohérent. Voilà pourquoi une fois diminuée elle accomplira tout de manière parfaite et aussi parce que le mercure doit être mêlé par les plus petites parties avant qu'il ne fuie¹⁵.

Dans la seconde partie du *Rosarius*, la *Practica*, chap. 28, la thèse dite *per minima* est non seulement citée mais présentée comme la seule efficace. La médecine « pénètre au plus intime » de l'or ou de l'argent, elle le transforme, le multiplie et surpasse l'œuvre même de la nature :

Quand les trente parts de son eau rouge seront ensemble, fixées de cette façon, [la médecine] est alors imbibée de son huile rouge et on la sublime, tour à tour avec elle, jusqu'à la fixation au fond. Puis mets-la [l'eau rouge] sur un feu très tiède pendant un jour et une nuit afin qu'elle soit mieux épurée et qu'elle se fixe mieux avec l'huile. Ensuite extrais-la et cérifie-la dans un creuset avec son huile rouge sur un feu lent, en laissant choir celle-ci goutte à goutte, jusqu'à ce qu'elle se fonde comme cire sans fumée et qu'elle fasse un avec elle, pénétrant, teignant au plus intime et se maintenant. Projette donc une part de cette médecine sur mille parts de lune ou sur mille parts de mercure purifié avec du sel et du vinaigre : il deviendra soleil très véritable quel que soit l'examen, bon et bien meilleur que le produit de la mine. Car l'or et l'argent de cet élixir dépassent l'or et l'argent de la mine en toutes leurs propriétés et espèces¹⁶.

Il est possible que la thèse gébérienne dite corpusculaire par Newman ne corresponde peut-être pas exactement à ce qu'explique ce dernier dans *Atoms and Alchemy*, toutefois si l'on doit en mesurer l'influence dans les textes alchimiques comme le *Rosarius*, force est d'admettre que ce dernier texte non seulement transmet cette « innovation » théorique de Geber (voir les chapitres de la *Summa* 28, 59, 81, 92)¹⁷, mais qu'il en propose une application pratique pour réussir l'œuvre. Car, même si la *Summa perfectionis* livre un grand nombre d'informations spécifiques sur l'alchimie et sur sa réalisation au laboratoire¹⁸, elle reste une *summa*, à savoir une synthèse, « une collection organique et élaborée »¹⁹, ne délivrant pas une pratique usuelle de la transmutation. Le *Rosarius*, lui, a

cette ambition, non seulement de donner à lire des extraits de philosophes comme Geber, le pseudo-Aristote, le pseudo-Avicenne, coordonnés dans un ensemble cohérent, mais aussi de fournir un mode d'emploi, une marche à suivre, qui de l'œuvre au noir à l'œuvre au rouge, couvre tout le processus de transformation du métal.

Dans un article de 1993²⁰, Newman voit le *Rosarius* comme une « exposition » de la *Summa perfectionis magisterii* et de ses thèmes principaux, insistant plus particulièrement sur celui du « mercure seul ». Je crois qu'il faut y ajouter la théorie des *minima* qui me semble aussi omniprésente dans le *Rosarius* qu'elle l'est, selon Newman, dans la *Summa perfectionis magisterii*.

Le *Rosarius* eut un grand retentissement dans le petit monde des alchimistes. Souvent copié et commenté, souvent pillé, il exerça un véritable empire sur nombre de textes alchimiques parmi les plus importants.

Speculum alchimiae

Le *Rosarius* constitue le meilleur exemple de texte apparenté à la *Summa perfectionis magisterii*, toutefois il n'est pas le seul à compter des éléments gébériens. L'un des textes les plus importants parmi ceux du corpus arnaldien est le *Speculum alchimiae*, un traité du début du XIV^e siècle, qui, sous la forme d'un dialogue entre un maître et son disciple, tente d'éclaircir les nombreuses difficultés de l'art alchimique²¹. Le maître du *Speculum alchimiae* se réclame de Geber et de son maître-livre, la *Summa perfectionis magisterii*. Il révèle à son disciple le secret de la sublimation, qui contient en son noyau la thèse des *minima*. « Elle ne consiste, dit-il, qu'à séparer les petites particules (*subtiles partes*) des grandes particules (*a partibus grossis*), etc. ». On reconnaît sans peine le lexique de la *Summa perfectionis magisterii* analysé par Newman²². Le maître, qui a bien lu la *Summa perfectionis magisterii*, explique ensuite que la sublimation n'advient qu'après les autres opérations préparant le composé alchimique. Il ne s'agit pas de prélever du mercure vulgaire et de le sublimer ensuite sans préparation (putréfaction, dissolution).

Au chap. 7 du *Speculum alchimiae*, c'est le chapitre 28 de la *Summa perfectionis magisterii* qui est glosé, chapitre dont nous avons vu plus haut qu'il est un passage-clé. « Il a de la sympathie pour les métaux auxquels il plaît ... ». Le *Speculum alchimiae* fait plus que citer ce chapitre, il amplifie la formule de la *Summa perfectionis magisterii* par : « quoniam miscetur cum ipsis per minima ... »²³. Dans le *Rosarius*, se référant également au chap. 28, on retrouve la même phrase, amplifiée. Or les premières versions manuscrites du *Speculum alchimiae* l'ignorent²⁴, témoignant de l'influence

du *Rosarius* qui, dans les copies tardives de textes qui lui sont voisins comme le *Speculum alchimiae*, est littéralement dévalisé pour accentuer certains aspects, en l'occurrence la théorie *per minima* de Geber. Quoi qu'il en soit, il reste que le *Speculum alchimiae*, comme le *Rosarius*, mentionne ouvertement la thèse *per minima* de Geber. Elle est pour lui une des rares façons de comprendre l'art transmutatoire²⁵, du moins de l'expliquer de manière rationnelle²⁶. Cependant, le *Speculum alchimiae*, qui s'en tient surtout aux aperçus spéculatifs de l'alchimie, est moins proluxe sur le sujet que le *Rosarius*.

Novum Lumen

Le *Novum Lumen* est l'œuvre d'un théoricien de l'alchimie et non celle d'un compilateur comme dans le cas du *Rosarius*. L'auteur livre des détails remarquables sur les couleurs et le processus de transformation, trouvant ses références dans la *Turba philosophorum* et la *Summa perfectionis magisterii* de Geber. On n'y trouve pas la citation des *minima* ou de toute autre locution associée à la théorie gébérienne *per minima*. Toutefois, son auteur évoque le chapitre 80 de la *Summa* sur la « médecine du troisième ordre », c'est-à-dire une médecine plus puissante que celles du premier et du second ordre parce que, dit Geber, elle se mélange au métal vil par les *minima*²⁷.

Rosa aurea

Il s'agit d'un texte court tributaire du *Rosarius*. La thèse des *minima* se trouve, comme dans la *Catena*, dans une formule rapide :

“Ainsi, [dit son auteur], l'esprit pénétrera le corps, et le mélange par les *minima* pourra s'opérer.”²⁸

Le corpus du pseudo-Arnaud de Villeneuve, un des plus importants au Moyen Âge, témoigne donc de la réception de la théorie des *minima*, et cela par le truchement du *Rosarius*, plus que d'aucun autre texte. Un rapide examen de ce corpus confirme l'importance de cette théorie comme partie constituante de la véritable alchimie, celle qui, s'opposant à l'alchimie sophistique, tente de rendre crédible cet art auprès des savants du temps.

Le corpus alchimique du pseudo-Albert

Le corpus alchimique attribué à Albert le Grand est moins important que celui du pseudo-Arnaud de Villeneuve. Il prend forme peu après la mise en circulation du *De mineralibus* et celle de la *Summa perfectionis magisterii* du pseudo-Geber. On a en effet conservé des témoins manuscrits de la *Semita recta*, attribuée à Albert le Grand, qui appartiennent à la fin du XIII^e siècle, ce texte inaugurant en quelque sorte le corpus pseudo-albertien.

Semita recta

Il n'est pas de texte alchimique latin plus étudié que la *Semita recta*. Attribué à Albert dès les premières copies et longtemps considéré comme authentique, il a été définitivement identifié par R. Halleux et par W. Newman comme un traité composé par un ou des disciples du maître dominicain, soucieux d'adapter à la pratique l'enseignement d'Albert ainsi que de Geber. Selon Newman²⁹, l'auteur de la *Semita recta* a plagié plusieurs passages de la *Summa perfectionis magisterii* dans le but exclusif de proposer à la lecture d'un praticien des recettes éprouvées, mais il ne recueille aucune des grandes théories de Geber, pas plus celle du « mercure seul » que celles des *minima* et des trois médecines. Cependant, le compilateur de la *Semita recta* ne pouvait pas reprendre des extraits de la *Summa perfectionis magisterii* sans que soient dispersés dans son texte des *membra disjecta* de la thèse gébérienne des *minima*, par exemple dans le paragraphe sur le « soufre », dont les premières lignes proviennent directement de la *Summa perfectionis magisterii* : « habet fortissimam compositionem et est uniformis substantie in suis partibus »³⁰. Mais là s'arrête toute allusion à la théorie *per minima* de Geber.

Newman estime que la *Semita recta*, qui, dans la chronologie des textes, se place au tout début de la réception de la *Summa perfectionis magisterii*, n'avait pas encore pris toute la mesure des concepts élaborés par Geber.

Alkimia minor

Un deuxième texte du corpus albertien a retenu notre attention. Il s'agit d'un réceptaire assez développé divisé en 32 paragraphes qui, du moins dans les treize premiers, doit l'essentiel de son propos à la *Semita recta* ; puis, l'*Alkimia minor* fournit des recettes de plus en plus longues où se reconnaissent des influences divergentes, les unes fondées sur le mercure, d'autres sur la distillation du sang d'un homme roux, sur l'urine d'enfant,

sur le vitriol, etc. L'*Alkimia minor* apparaît alors comme un manuel de laboratoire dénué de portée théorique. Pourtant, la thèse gébérienne des *minima* est bien rapportée au chapitre 24³¹. L'auteur de l'*Alkimia minor* offre une description de la transmutation à peu près semblable à celle que donne le *Rosarius*. Cette transmutation est donc fondée sur la sublimation qui transforme la médecine en deux substances, l'une volatile et l'autre fixe appelées, l'une et l'autre, selon la théorie, à former « une substance homéomère dans toutes ses particules ». L'*Alkimia minor* ne rapporte sa recette ni à la *Summa perfectionis magisterii*, ni au *Rosarius* mais à un florilège alchimique, les *Dicta philosophorum*, circulant au XIV^e siècle qui rassemblait des extraits d'auteurs arabes et du Geber latin.

«Alors, [dit l'anonyme de l'*Alkimia minor*], s'accomplissent les *Dicta philosophorum* qui disent : si tu savais faire le fixe volatile et le volatile fixe, tu découvriras la perfection de l'art. Quelqu'un ajoute, si tu savais conjoindre par les plus petites parties l'esprit et les corps purifiés au plus haut degré, il est indubitable que tu aurais accompli des œuvres parfaites³².»

Certes, l'*Alkimia minor* livre là une application pratique de la thèse gébérienne des *minima*, mais, à l'inverse de ce qu'on lit dans le *Rosarius*, elle est mentionnée comme seulement une possibilité envisagée par un « philosophe » : la grande recette qui clôt le recueil, fondée sur le vitriol et le safran de fer, l'ignore superbement.

De occultis naturæ

Le *De occultis naturæ*, autre texte du corpus albertien, diffère des traités précédents qui cherchent à fournir une méthode à destination d'alchimistes actifs³³. Ici nous sommes en présence d'un texte spéculatif glosant des livres théoriques, voire poétiques, de là vient qu'il brasse un grand nombre de thèmes, d'images, d'idées empruntées principalement à des livres comme la *Turba philosophorum* et son commentaire (les *Allegoriæ sapientum*), aux ouvrages alchimiques attribués à Aristote, à Razi ou à Avicenne. En ce qui concerne la théorie alchimique, le pseudo-Albert se place sous l'autorité de la *Summa perfectionis magisterii* qui lui semble supérieure aux autres, car, dit-il, elle permet d'accomplir la quête d'Avicenne demandant aux alchimistes de réussir l'œuvre « d'une substance une, fixe, agrégée à partir de plusieurs ». À plusieurs reprises, il cite Geber. Il insiste sur la thèse des trois médecines et son corollaire, celle des *minima*. « Je dis, [affirme-t-il], que la plus petite partie (*minima pars*) du corps suffit »³⁴. Plus loin, il ajoute :

“La seule chose qui nous reste encore à voir, c'est par quel moyen (*ingenium*) il pourrait être mêlé par les plus petites parties (*per minima*). Là-dessus, la *Summa* des philosophes a statué. En effet, il y en a qui disent qu'une conjonction totale se réalise avec la dissolution, d'autres avec dissolution et feu, d'autres encore avec seulement le feu. Tu rechercheras les diversités de tout cela dans le *Liber perfecti Magisterii*. C'est pourquoi je n'insiste pas. Cela dit, moi, dans cette œuvre je me range avec ceux qui procèdent en mêlant seulement avec le feu. Je vous engage à prêter attention à ces choses que nous appelons lavées, pures, les mêlant fortement en un et avec le feu jusqu'à ce qu'elles se fixent. Recommencez jusqu'à ce qu'il advienne un corps homogène³⁵.”

Donc, pour l'auteur du *De occultis naturæ*, la *Summa perfectionis magisterii* est désormais un ouvrage de grande référence auquel on renvoie comme à une autorité qui détient la clé du mystère et qui en a sondé toutes les profondeurs. Il ne s'agit plus d'y prélever, comme dans la *Semita recta* et l'*Alkimia minor* des notions techniques, mais de s'appuyer sur un texte qui a par avance répondu à toutes les questions et proposé des solutions. A chacun de choisir celle qui lui convient.

Les textes alchimiques compris dans les corpus du pseudo-Arnaud de Villeneuve et du pseudo-Albert ont plus d'un tour dans leur sac. Nous avons choisi de les analyser en premier, parce qu'ils contiennent des œuvres quasiment contemporaines de la *Summa perfectionis magisterii* : la *Semita recta* par exemple, mais aussi l'*Alkimia minor* et le *Speculum alchimicæ*. Ces textes ont tous survécu dans le manuscrit de Palerme, achevé au milieu du XIV^e siècle ; on peut donc supposer que leur mention dans la liste du frère Dominique de Bologne, transcrite dans ce même manuscrit, laisse envisager une date de composition vers la première décennie du XIV^e siècle, peu de temps après l'apparition de la *Summa perfectionis magisterii*. Leur comparaison avec des traités comme le *Rosarius* ou le *De occultis naturæ*, d'une facture autrement plus élaborée, fournit une première lumière sur la diffusion de la théorie gébérienne des *minima*. Pratiquement absente de la *Semita recta*, citée de manière incidente comme une possibilité prometteuse dans l'*Alkimia minor*, à peine exploitée dans le *Speculum alchimicæ*, elle devient dominante dans le *Rosarius* (écrit avant 1348) au point de constituer l'alpha et l'omega de sa théorie transmutatoire. Mais voyons maintenant si, dans les grands traités d'alchimie, les fleurons de cette littérature, elle continue de nourrir leur conception de la transmutation. Pour cela, étudions les deux principaux livres du corpus pseudo-lullien : le *Testamentum* et le *De secretis naturæ sive de quinta essentia*. L'étude de la *Margarita pretiosa novella* de Petrus Bonus et de la *Responsio* de Bernard de Trèves, ainsi que de la *Correctio fatuorum* attribué à Richard l'Anglais, des ouvrages essentiels de l'alchimie

latine, sera pour nous l'occasion d'observer la théorie gébérienne des *minima* au cœur même de la pensée alchimique, telle que les médiévaux la conçoivent avant qu'elle ne change radicalement à la Renaissance sous l'influence de Paracelse.

En guise d'introduction à cette deuxième partie, nous commencerons par le *Rosarius* de Dastin, qui représente un cas exemplaire de traité alchimique conçu avec, entre autres matériaux, des éléments substantiels du *Rosarius* pseudo-arnaldien.

John Dastin

Rosarius

John Dastin serait un alchimiste anglais³⁶ du début du XIV^e siècle. Plusieurs textes alchimiques lui ont été attribués, dont une lettre au pape Jean XXII sur le sujet de l'alchimie³⁷. Mais son texte le plus important reste le *Rosarius*, dont celui du pseudo-Arnaud de Villeneuve serait le modèle. Des passages très significatifs de ce dernier se retrouvent en effet dans le *Rosarius* de Dastin. Le dessein du régime alchimique correspond à celui du *Rosarius philosophorum* : améliorer les capacités de l'organisme humain. Ce régime est identique à celui du livre attribué à Arnaud de Villeneuve. Cependant, Dastin a écrit un texte d'esprit plus spéculatif que technique ; son style est nettement plus attrayant que celui du *Rosarius* pseudo-arnaldien, dont l'intention première est de décrire en détail le processus alchimique en suivant un plan. Dastin, par exemple, use d'une formule saisissante pour en signifier la réalité, une formule qui doit plus à la langue de la *Turba philosophorum* (une autre de ses sources) qu'à celle du *Rosarius* : « Le magistère, dit-il, est un aigle qui vole dans l'air et un crapaud qui marche sur la terre »³⁸. La *commixtio per minima* est comme dans le *Rosarius* une opération nécessaire à la réussite de l'œuvre. Mais, dans le *Rosarius* de Dastin, elle n'est donnée que réduite à cette expression. Sa glose du chapitre 28 de la *Summa perfectionis magisterii* est la suivante :

“Notre médecine doit nécessairement être prise de ces choses qui adhèrent de la manière la plus grande au vif-argent en leur profond et *elles se mêlent à lui par les plus petites parties* avant qu'il ne fuie. En effet le vif-argent adhère plus au vif-argent et il est plus aimé de lui, après lui l'or, et après, l'argent³⁹.”

On lit dans le *Rosarius* pseudo-arnaldien :

“Il a de la sympathie pour les métaux auxquels il plaît : il est le moyen de conjoindre les teintures, parce qu'il se mêle avec eux par les plus petites parties de sorte que de manière naturelle il leur adhère en profondeur et ce parce qu'il est de leur nature. Cependant il se mêle facilement avec le soleil et la lune, en ce que ces deux-là participent plus de sa nature pure⁴⁰.”

Voici maintenant le texte latin de la *Summa perfectionis magisterii*, chap. 28 :

« Ex hoc utique maximum elicias secretum. Est enim amicabile et metallis placabilis, et medium coniugendi tincturas. Et non submergitur aliquod in argento vivo nisi solo ; solvuntur tamen iupiter et saturnus, luna et venus ab eo, et commiscuntur. Et sine ipso aliquod metallorum deaurari non potest »⁴¹.

Dans ce passage séminal, le pseudo-Geber explique qu'il y a un véritable lien de sympathie entre le mercure et les métaux, et qu'il est le moyen de conjoindre les teintures. Rien ne s'y engloutit comme l'or. Il dissout les autres métaux, de façon à ce qu'ils se mêlent. Le texte de Dastin apparaît comme apparenté au texte du *Rosarius* pseudo-arnaldien plutôt qu'à celui de la *Summa*. Il en reprend le membre de phrase où la référence aux *minima* est notée. En effet, on remarquait déjà dans le *Rosarius* pseudo-arnaldien une interprétation du texte de la *Summa perfectionis magisterii* expliquant le mélange des teintures par les *minima*, mais Dastin ajoute que le vif-argent possède tout d'abord le plus d'adhérence au pur vif-argent, puis, dans l'ordre, à l'or, puis à l'argent, ce qui nous paraît une glose personnelle. On relève, de plus, que l'allusion aux métaux autres que l'or et l'argent, présente chez le pseudo-Geber, n'est reprise, ni par le *Rosarius* pseudo-arnaldien, ni par Dastin. Ne comptent comme métaux de base que les métaux nobles et le vif-argent. Le *Rosarius* de Dastin revient sur le thème de la *commixtio per minima* au chapitre XVII⁴², définissant la *putrefactio* comme le mélange de la terre et de l'eau « par les plus petites parties », et ce « jusqu'à ce que tout fasse corps ». Nous sommes là au cœur de la théorie gébérienne des *minima*. Cependant, comme nous l'avons vu plus haut, le *Rosarius* de Dastin est un texte synthétique, un texte plus littéraire que scientifique. Le vocabulaire et sa démonstration *per minima* restent donc limités à quelques formules.

Le corpus de textes alchimiques attribués à John Dastin comprend aussi une *Lettre* adressée au pape Jean XXII⁴³. Ce court texte développe des idées générales sur l'alchimie sans entrer dans le détail des opérations⁴⁴. Il dépend en grande partie d'un *alchimicum* du pseudo-Arnaud de Villeneuve, le *Flos florum* où la question des *minima* est éludée. La *Lettre* de Dastin n'en parle donc pas⁴⁵. En revanche, le corpus alchimique de

Dastin comprend également un *Verbum abbreviatum* proche de son *Rosarius*. La thèse *per minima* y est mentionnée⁴⁶. De même, le *Libellus aureus*⁴⁷ s'avère un résumé fidèle du *Rosarius* du pseudo-Arnaud. Son titre, dans la version imprimée du *Theatrum chemicum*, est par ailleurs fort significatif : « Compendium utile ad credendum meditationum experimentum »⁴⁸, à savoir un compendium utile pour croire à l'expérimentation de l'alchimie spéculative (*meditationum*). Après une courte exposition théorique, Dastin introduit son sujet par une phrase dont les premiers mots sont les suivants : « hoc autem non fit nisi subtilietur intime, in praeparatione certa per multam sublimationis reiterationem »⁴⁹. On reconnaît là, sans peine, la thèse *per minima*. Le reste du texte résume le *Rosarius*.

Le corpus pseudo-lullien

Testamentum

W. Newman⁵⁰, s'appuyant sur M. Pereira⁵¹, juge du *Testamentum* comme du *Rosarius*, c'est-à-dire comme un des textes les plus réceptifs à la thèse *per minima* du pseudo-Geber (avec moins de fréquence néanmoins que dans le *Rosarius*). « Le *Testamentum*, [écrit-il], est rempli de références aux “particules subtiles” et aux “particules les plus petites”, par lesquelles l'auteur entend de véritables corpuscules »⁵². Or, quand il livra ses réflexions sur le sujet, Newman, prenant ses références dans la version imprimée de Manget, ne connaissait pas la version du *Testamentum* qu'éditèrent par la suite M. Pereira et B. Spaggiari⁵³. Il écrit, et nous pensons y déceler l'ombre d'un doute, qu'« enfoui à l'intérieur des complexes spéculations et des *figuræ* lulliennes du *Testamentum*, c'est bien en effet un noyau d'alchimie gébérienne que nous y rencontrons »⁵⁴. Et il cite pour illustrer son propos le chapitre XI du *Testamentum* I (éd. Manget, I, 715a). Dans ce chapitre, le pseudo-Lulle divise la *resolutio* de la pierre en trois parties, la première dite « corporelle », appelée *Retfage*, la deuxième « spirituelle » (*Agazoph*), la troisième « spirituelle et corporelle » (*Ubidrugal*). Et, plus loin, il apporte la précision suivante :

Retfage n'est rien d'autre que la réduction des grosses particules en de très petites et très subtiles, c'est-à-dire une réduction du grossier en simple⁵⁵.

Aucun doute n'est possible, estimait Newman, nous sommes là en présence de la théorie gébérienne des *minima*. Dans la version manuscrite du témoin édité par M. Pereira et B. Spaggiari, le ms. Oxford, Corpus Christi College, 244, achevé en 1455 par John Kirkeby qui traduit peut-

être en latin une copie catalane de la version d'origine (à moins que l'original ne soit le texte latin), on lit au chapitre 12 du *Testamentum* I (p. 43) :

Retfage n'est rien d'autre que la réduction des particules grosses ou réduction du grossier en simple⁵⁶.

Notre hypothèse est que le texte de Manget a reproduit une version glosée de cette phrase, qui dans les premières rédactions n'est pas aussi clairement « corpusculaire » qu'elle l'est dans la *Bibliotheca Chemica Curiosa* de Manget. Newman évoque un autre passage du *Testamentum* significatif, selon lui, du « large usage » que ce texte fait des motifs gébériens ; il s'agit du chapitre 48 de l'édition Manget :

Ladite humidité et ladite terrestreté se mélangent subtilement ensemble *per minimas et insensibiles petias*, en sorte qu'un minimum de terre sèche et un minimum d'humidité — jusqu'à la quantité d'un grain de chaque, et l'autre en quantité semblable — sont unis ensemble de telle manière que ni l'un ni l'autre ne peut être séparé des *particules* de son genre, comme on le voit de manière manifeste à travers leur sublimation⁵⁷.

De son côté, J. Kirkeby, le scribe du manuscrit d'Oxford, écrit (p. 164) : « *per parvas pecias insensibiles* », traduisant le catalan « petites peces ». Là encore, nous avons une leçon quelque peu variante et cette variante porte justement sur l'emploi du mot *minimas*, dans ce cas remplacé par celui de *parvas*. Il nous semble cependant qu'ici, malgré cette légère différence (*parvas* pour *minimas*), nous tenons une preuve de l'influence de la théorie *per minima* de la *Summa*, dont nous avons vu plus haut qu'elle trouve sa confirmation dans l'exemple de la sublimation, ainsi qu'il est rappelé dans le *Testamentum*⁵⁸. W. Newman poursuit son idée⁵⁹, relevant une troisième trace du corpuscularisme supposé du *Testamentum*, lorsque le *Magister Testamenti* tient à révéler la « porosité » de l'humide en prenant comme exemple le sel, « placé dans l'eau, parce qu'il est le seigneur de la pierre se tenant dans sa chaire ». Et cette « chaire », explique le *Magister Testamenti*, ce sont les pores — des « interstices », dit Newman p. 72 —, « remplis d'air subtil », que combler les particules de sel (*re*) épaississant l'eau⁶⁰. La version catalane (331) reproduit le même texte :

“Fill, sa cadira és per los poros de ses aygues que primarement eren plen d'aire molt subtil e ara són tots plens de la cosa qui espeseix⁶¹.”

Newman estime qu'on a ici affaire à une « intéressante spéculation corpusculaire ». Cependant, sa démonstration ne nous convainc pas

totalem. Le *Testamentum*, qui ne cite Geber que deux fois et la *Summa perfectionis magisterii* une fois, ne s'y réfère jamais de manière aussi affirmée que dans les textes qui dépendent directement de la *Summa*, comme le *Rosarius* pseudo-arnaldien ou le *Speculum alchimie*. En revanche, ses liens avec le *Rosarius* sont patents, il en existe de nombreux témoignages⁶². Or le *Rosarius* développe et fonde son intention sur la thèse gébérienne des *minima*, de là notre déconvenue de n'en retrouver que de faibles échos dans le *Testamentum*⁶³. Le vocabulaire utilisé par le *Magister Testamenti* ne correspond pas exactement à ce qu'on peut lire dans le *Rosarius* (*minima*, *fortissima compositio*, *substantia uniformis*, etc.), les passages-clés de la *Summa* (le chap. 28 entre autres) ne sont pas repris, encore moins glosés. Notre opinion est donc que la théorie alchimique du *Testamentum*, philosophique, voire métaphysique, outrepassa, comme le note M. Pereira⁶⁴, les questionnements et les recherches d'Albert et du pseudo-Geber qui, face aux erreurs des alchimistes, s'appliquèrent à construire des théories qui permettent la transmutation et la réalisation d'un or fiable, un or qui résiste à l'examen. Le *Testamentum* a d'autres ambitions, qui sont d'obtenir ce que M. Pereira considère comme un « *operatore universale della perfezione materiale* ». Des œuvres comme le *Rosarius* ou même le *De mineralibus* ne comptent pas pour le *Magister Testamenti* comme des autorités dont on transpose les données de façon à les rendre accessibles au petit peuple des alchimistes, mais ils sont des outils de travail avec lesquels le *Magister Testamenti* mène sa propre réflexion, son projet pouvant se définir comme un « dépassement de la perspective étroitement métallurgique »⁶⁵. Newman lui-même finit par constater dans le *Testamentum* un « mouvement d'écart » par rapport aux thèses gébériennes⁶⁶.

De secretis naturæ sive de quinta essentia

Dans le *Liber de secretis naturæ sive de quinta essentia*⁶⁷, la pratique alchimique, celle du *Testamentum*, est désormais liée à la quintessence du vin, introduite dans l'alchimie par Jean de Roquetaillade vers 1350. D'autre part, son auteur dit à plusieurs reprises s'appuyer sur le *Testamentum*. Si le *Liber de secretis naturæ sive de quinta essentia* semble à première vue un livre de médecine guidé par la pensée et le style de Lulle, son intérêt pour l'aurifaction n'est pas à négliger. À la différence de Jean de Roquetaillade, dans la première partie de son traité, il considère même la transmutation comme le principal objet de sa recherche⁶⁸. Il commence par un prologue où s'entretiennent Lulle et un moine, puis viennent les deux livres paraphrasant le *De quinta essentia* de Roquetaillade, et il se termine avec une *Tertia distinctio* consacrée à une

application alchimique de la méthode lullienne (abécédaires et arbres). En ce qui concerne la théorie *per minima* du pseudo-Geber, enfouie, pour ne pas dire noyée dans le *Testamentum*, dans un texte comme le *De secretis naturæ*, tributaire du *Testamentum*, elle est littéralement passée sous silence.

Petrus Bonus⁶⁹

Margarita pretiosa novella

En 1330, soit quelques années avant le *Testamentum* pseudo-lullien, paraît le livre de Petrus Bonus, la *Margarita pretiosa novella*⁷⁰. L'intention de Petrus Bonus est de défendre l'alchimie en lui fournissant les arguments philosophiques dont, selon lui, la carence gêne la pleine reconnaissance de ce savoir.

Dans le *De mineralibus*, Albert concevait l'alchimie comme étant en partie occulte, c'est-à-dire qu'on ne pouvait en éclaircir les causes par syllogisme⁷¹. Petrus Bonus, prenant position contre Albert sur ce point, multiplie les syllogismes, justifiant ainsi l'alchimie par de fréquentes références aux œuvres d'Aristote. Son but est de placer cet art décrié au centre de la vérité philosophique : « si la science des minéraux est vraie, alors la science alchimique est vraie en tout point »⁷². Cependant, sa démonstration le mène ensuite à ne livrer comme cause effective de la transmutation que la raison divine (et non la nature comme chez Albert), au point de considérer tous les ouvrages alchimiques des Anciens (le pseudo-Aristote, le pseudo-Platon) comme autant de prophéties proclamant les mystères chrétiens. La *Margarita pretiosa novella* est indubitablement un texte plus métaphysique que technique. En ce qui concerne la doctrine alchimique, Petrus Bonus se réclame de la *Summa perfectionis magisterii*, qu'il cite abondamment. Il eut, semble-t-il, un accès direct à ce livre, dont il indique les chapitres : *Geber dicit in Capitulo de differentiis omnium medicinarum*, *Geber dicit in capitulo de sublimatione mercurii*, *Geber in proemio Summæ suæ dicit*, etc. Parmi tous les philosophes qu'il a lus pour composer la *Margarita pretiosa novella*, dit-il, Geber lui parut le plus fiable et le plus clair. Car cette science est écrite en des termes qui lui sont propres, en sorte qu'il devient très difficile ensuite de chercher et d'opérer directement à partir de ces textes obscurs⁷³. Très peu de savants, conclut-il, ont su aller au fond du problème et en atteindre la fin comme Geber dans la *Summa*.

De la *Summa perfectionis magisterii*, il rapporte la thèse des trois médecines, l'idée de la grâce divine gardienne de l'œuvre⁷⁴, la thèse d'une « médecine une », celle du mercure seul. Chez Petrus Bonus comme chez

Geber, le pur vif-argent (débarrassé du mauvais soufre extrinsèque) se mélange « sans violence ni effort » avec l'or, parce qu'il est de sa nature⁷⁵. Par nombre de ses aspects, la *Margarita pretiosa novella* n'est qu'un long commentaire de la *Summa perfectionis magisterii*. La thèse *per minima* s'y rencontre également (chap. XXIII)⁷⁶. L'humidité des métaux est double : une partie extrinsèque qui ne parvient pas à l'*union totale* et une autre, ininflammable, d'égale proportion, composée de très petites parties *par une forte mixtion*⁷⁷. Voilà la matière première des métaux, humide, incombustible, subtile, « fortement mêlée par les plus petites parties dans les cavernes minérales de la terre »⁷⁸.

La *Margarita pretiosa novella* n'est pas un texte alchimique au sens propre. Elle ne comporte ni recettes, ni aucun des topoï dont les alchimistes se plaisent à orner leurs préfaces, son vocabulaire reste scolastique, et fort peu métaphorique. Il s'agit d'une défense et illustration de l'art divin, étayée par des citations philosophiques, argumentée, réservée aux clercs qu'intéresse l'alchimie et qui sont préparés à en recevoir les nouvelles conceptions. De ce point de vue, Bonus considère simplement la *Summa perfectionis magisterii* comme le texte alchimique qui délivre la meilleure approche du processus alchimique, et s'il en sélectionne et glose les extraits les plus significatifs, son propos principal ne réside pas dans la thèse des *minima* qui, par exemple, ne suffit pas à rendre compte de la transmutation (un miracle), comme dans le *Rosarius*, puisque l'intervention divine est, chez lui, une condition sine qua non de la réussite.

Bernard de Trèves

*Responsio ad Thomam de Bononia*⁷⁹

Dans sa *Responsio ad Thomam* (terminée en 1385), Bernard de Trèves, selon W. Newman, fait reposer sa théorie alchimique sur une explication « pleinement corpusculaire »⁸⁰.

En effet, Bernard soutient la thèse d'une alchimie exclusivement métallurgique.

Tu dis, [écrit-il à l'adresse de Thomas de Bologne], que la forme de l'or est accomplie dans la vertu des corps célestes, en particulier celle du soleil ; moi, je dirais, soit dit sans t'offenser, que tu ne dois pas raisonner ainsi. Car comme il doit être philosophiquement cru, l'or n'est rien d'autre que du mercure *anatizatum*, c'est-à-dire qu'il est *digéré* de façon parfaitement égale dans les viscères de la terre minérale⁸¹.

Pour Bernard, il n'y a entre l'or et le soleil qu'un simple rapport d'analogie, une « similitude de noms »⁸². De là vient qu'il ne conçoit la formation de l'or que de manière naturelle, sans qu'il y ait besoin d'ajouter à l'action du feu celle de l'influence astrale⁸³. Dès lors, la thèse corpusculaire, *per minima*, devient centrale. Bernard tient cette dernière autant de Geber que du *Rosarius* du pseudo-Arnaud de Villeneuve.

“La cause de ce poids, [écrit Bernard], réside dans une ferme solidité permanente de la terre et de l'eau, et dans la solution de l'eau homogène avec la terre, car l'eau dissout la terre homogène. De même, la cause du poids est une intrinsèque mixtion de ces derniers [l'eau et la terre] *per minima*, etc.”⁸⁴

Bernard reprend presque mot pour mot ce que théorisa le pseudo-Geber dans la *Summa* et que transposa le pseudo-Arnaud dans son *Rosarius*, à savoir que le composé alchimique n'est achevé que s'il devient « une substance homéomère dans toutes ses particules ». Cela ne peut advenir, ainsi que l'explique le pseudo-Geber, que la *permixtio per minima*⁸⁵. La thèse dite corpusculaire est au cœur de son argumentation, la pierre se définissant ensuite non comme une « forme formable comme la forme végétative, mais elle possède seulement une forme formée [...] parce que [la pierre] est homogène »⁸⁶. L'originalité de la *Responsio* de Bernard tient non pas en ce qu'il maintient vivante dans son texte la thèse *per minima* telle que la formula le pseudo-Geber, comme c'est le cas chez Petrus Bonus, mais en ce qu'il la comprend aussi à travers le travail du pseudo-Arnaud qui fournit une pratique de cette thèse⁸⁷. Bernard connaît également l'œuvre médicale d'Arnaud (le *Speculum medicinæ*) à laquelle, de toute évidence, il se réfère quand, par exemple, il rappelle que seule une subtile substance spirituelle peut, une fois « congelée », pénétrer et colorer le métal⁸⁸, a fortiori tout corps malade. Cela, paraît estimer Bernard, le *Rosarius* du même Arnaud le réalise.

Avec la *Responsio* de Bernard, nous avons un témoignage capital de la présence, en cette fin du XIV^e siècle, de la thèse gébérienne *per minima*. Pourtant, dans un autre texte important et contemporain de la *Responsio*, la théorie des *minima* est tout simplement ignorée.

***Correctio fatuorum* (inc. « Cum omnium rerum emendatio »)**

La *Correctio fatuorum* est un livre parfois attribué à Bernard de Trèves⁸⁹, le plus souvent à Richard l'Anglais, un alchimiste du XIV^e siècle dont on repère déjà le nom dans le manuscrit de Palerme⁹⁰. La doctrine de la *Correctio fatuorum*, à la base de son argumentation, reste conforme à celle des grands textes de l'alchimie théorique : Geber, Albert, le *Rosarius*,

Dastin. Son auteur, de toute évidence un bon connaisseur de l'alchimie du XIV^e siècle, insiste dans son prologue sur la nature, dont l'art n'est jamais qu'une « aide » (*juvamen*)⁹¹. Il reprend l'exhortation à l'étude des livres qui provient du *Rosarius*. Il établit sa théorie transmutatoire sur la thèse du mercure seul en ajoutant des commentaires de son cru. Il distingue par exemple les métaux des minéraux, les premiers descendant du mercure tandis que les autres, les minéraux, n'en descendent pas. Il définit le soufre comme un « feu simple, vivant, ranimant les corps morts »⁹². La matière première est donc le mercure qui contient son bon soufre, c'est l'essence des métaux. Cependant, l'auteur de la *Correctio fatuorum* semble souvent douter que, de manière artificielle, on réussisse à recouvrer cette matière première. Aristote et Avicenne l'attestent. Pour atteindre leur objectif, les alchimistes doivent détruire l'œuvre de nature en commençant par la tête⁹³, c'est-à-dire par l'or et par l'argent pour arriver au principe général des métaux : le vif-argent. Cette dissertation alchimique est complexe, articulée comme une *quæstio* scolastique. On part de l'or, et partant de l'or on finit par trouver la « nature aurée ». Elle élimine toutes les solutions à base de végétaux, de métaux mineurs, des animaux⁹⁴, ne retenant que le travail de l'or et celui de l'argent. Le *Rosarius* du pseudo-Arnaud en est la source principale, mais à aucun endroit de ce texte, l'Anonyme de la *Correctio fatuorum* ne parle de la théorie corpusculaire de Geber, laquelle, pourtant, constitue le noyau de la théorie transmutatoire de ce même *Rosarius*. Mais, semble-t-il, il estime qu'il n'en a guère besoin pour étayer son propos qui, rappelons-le, reste spéculatif et fort éloigné des aspects techniques de l'alchimie.

La *Correctio fatuorum* nous paraît donc une réflexion philosophique sur l'alchimie plutôt que l'ouvrage d'un praticien. Son auteur écarte toutes les méthodes que l'on trouve habituellement dans les *practicæ* et les recettes pour ne retenir que la théorie du mercure seul. Il faut œuvrer à partir de l'or naturel et le transformer par l'art. Cette quête de l'or, axée sur le précepte du « semblable », commande toute sa démonstration. À la lecture, la *Correctio* se révèle une dissertation fort inspirée du *Rosarius*. Arnaud de Villeneuve est par ailleurs cité comme un « medicum peritissimum » qui, grâce à la médecine alchimique, a guéri le pape Innocent d'une maladie incurable⁹⁵. Suit une phrase (« De sene facit juvenem... »)⁹⁶ commune (à quelques variantes près) au *Rosarius*, au *De vita philosophorum* et à l'*Epistola ad Jacobum de Toletio de distillatione sanguinis humani*, trois œuvres appartenant au corpus alchimique attribué à Arnaud de Villeneuve. On en trouve aussi la trace dans le *Rosarius* de Dastin (version de Manget)⁹⁷ et dans un apocryphe alchimique de Roger Bacon, le *Secretum secretorum de laude lapidis philosophorum*⁹⁸.

Cependant, bien qu'apparentée au *Rosarius* pseudo-arnaldien, la *Correctio* ignore la théorie *per minima*.

Les recettes

Dans son livre *The Scientific Reinterpretation of Form*, N. E. Emerton constate que le débat philosophique sur la *mixtio* reste abstrait et qu'il passe rarement de l'étude au laboratoire⁹⁹.

De fait, nous avons lu beaucoup de recettes, et, à l'exception notable de l'*Alkimia minor*, nous n'y avons pas trouvé la thèse de la *mixtio per minima*. Pour tenter de comprendre la raison de cette absence, il faut, je crois, revenir à la définition que donne Robert Halleux de la recette : « une combinaison d'ingrédients et d'opérations concaténés en vue d'un résultat »¹⁰⁰. Les grands réceptaires des XIV^e et XV^e siècles (Sedacer, Maurperg)¹⁰¹ ne comportent pas de notation de la *mixtio per minima*. Dans le récit de ses *Voyages*, Léonard de Maurperg raconte ses rencontres avec plusieurs alchimistes. Il attend d'eux non seulement qu'ils lui cèdent le secret de l'art mais que, sous ses yeux, ils mettent en pratique leur recette. Elle doit toujours aboutir à un résultat, comme le rappelle R. Halleux. On y mêle des solutions corrosives comme l'alun à des métaux, des techniques comme la cémentation et la coupelle sont signalées. Les ingrédients de base sont réduits en poudre, amalgamés, chauffés, distillés, sublimés, enfin projetés. Ces ingrédients peuvent aussi bien être des *vegetabilia* (des plantes), des *animalia* comme le sang, mais au XV^e siècle, les recettes à base de minéraux semblent l'emporter. Les grands traités de théorie alchimique appartiennent à un autre genre de littérature, si ce n'est que quelques-uns contiennent des éléments de pure pratique alchimique, le *Rosarius* du pseudo-Arnaud, par exemple. Ce traité constitue même un exemple rare où la théorie *per minima* est mise à contribution pour expliquer le phénomène de la transmutation, de manière différente de ce qui est montré dans les recettes où, à l'issue des opérations, le composé alchimique est mélangé à du pur mercure et transformé par lui, sans plus d'explication. Prenons, par exemple, une recette de la *Sedacina* où les préparations sont décrites sans omettre aucun détail. Celle-ci se compose de deux parties. Un peu de cheveux noirs sont recueillis « alors que le Soleil est dans le Bélier ». Ce matériau d'origine animale, mêlé à d'autres substances, passe par des étapes intermédiaires comme la dissolution, la distillation, la congélation, le lavage, le séchage, la pulvérisation, l'inhumation et à nouveau la distillation. Au terme de cette première phase, on obtient un mercure dit sublimé ou « pierre lunifique », capable de transmuter n'importe quel métal en pur argent. Pour aller vers l'or, le but visé, on doit mêler cette « pierre lunifique » à un nouveau produit, « l'eau

rubis » issue du sédiment qui s'est déposé dans le fond de la cucurbite pendant la première phase et qui, transformé en cette « eau rubis » par les préparations habituelles (filtrage, lavage, distillation), s'égoutte au « nez de l'alambic ». Cette eau n'est qu'un composé médian entre la « pierre lunifique » et l'or alchimique¹⁰². Chez Sedacer comme chez le pseudo-Albert, l'auteur de l'*Alkimia minor*¹⁰³, une description minutieuse du dispositif suffit comme trame explicative. La vertu transmutatoire de la « pierre lunifique » ou celle de « l'eau rubis » (une fois conjointe à cette dernière) se déduisent des opérations qui constituent la recette. On n'y trouve pas de principe agissant, comme la *mixtio per minima*, extraite d'une réflexion théorique qui, dans le *Rosarius* pseudo-arnaldien, se vérifie pleinement au moment de la transmutation. Dans le *Rosarius*, en effet, l'élixir pénètre goutte à goutte la pierre jusqu'à ses plus infimes parties et ne fait plus qu'un avec elle. Voilà la médecine des métaux qui, projetée sur un peu d'or, le multiplie à l'infini.

Quelles leçons tirer de notre enquête ?

D'une part, les travaux de W. Newman ont permis de mettre en valeur l'une des plus intéressantes théories alchimiques du Moyen-Âge latin. Comme il l'a montré, la *Summa perfectionis magisterii* du pseudo-Geber, qui en détient la formule, rayonna sur quelques-uns des textes les plus importants du corpus alchimique médiéval. Le *Rosarius philosophorum* attribué à Arnaud de Villeneuve constitue un exemple parfait de traité théorique et pratique transmettant de manière scrupuleuse la thèse de la *mixtio per minima*. Pour l'auteur du *Rosarius*, la *mixtio per minima* est à la base de la transmutation finale. Ce traité devient alors le vecteur de la théorie gébérienne. On en trouve la trace dans le *Speculum alchimie* du même pseudo-Arnaud de Villeneuve, mais aussi dans la *Responsio ad Thomam* de Bernard de Trèves. Une lecture du *Rosarius*, après celle de la *Summa*, complétait certainement de façon très convaincante la connaissance de la *Summa perfectionis magisterii*. Cependant, la notion de *mixtio per minima* est concurrencée par d'autres concepts comme ceux de la médecine universelle (*Testamentum*) ou de la quintessence (*Rupescissa*), avec lesquels elle ne se confond pas. De plus, elle est quasiment absente des recettes.

Même si, à la fin du Moyen-Âge, son influence paraît décliner (comme on le voit dans la *Correctio fatuorum*), la *Summa perfectionis*, le *Rosarius* et la *Responsio* de Bernard de Trèves, seront publiés à la Renaissance et connaîtront le succès¹⁰⁴. L'histoire de la *mixtio per minima* (ou corpuscularisme) ne s'arrête pas là.

Notes

¹ Danielle Jacquart, “Minima in twelfth-century Medical texts from Salerno”, dans *Late Medieval and Early Modern Corpuscular Matter Theories*, ed. Christoph Herbert Lüthy, John Emery Murdoch and William Royall Newman, (Brill : Leyde-Boston-Köln, 2001), 39-56, ici 40.

² *Ibid.*

³ Danielle Jacquart, “Minima in twelfth-century Medical texts from Salerno”, 40-41.

⁴ Danielle Jacquart, “Minima in twelfth-century Medical texts from Salerno”, 47.

⁵ Charintia Hermann, *Hermann of Carinthia, De essentiis, a critical Edition with Translation and Commentary*, ed. Charles Burnett (Brill : Leyde-Köln, 1982).

⁶ William Newman, *The Summa Perfectionis of Pseudo-Geber* (Leyde : Brill, 1991).

⁷ William Newman, *The Summa Perfectionis of Pseudo-Geber*, 143. Norma E. Emerton, dans son livre, *The Scientific Reinterpretation of Form*, explique en quoi les atomistes se différencient (langage, conception, fonction) de ceux qu'elle appelle les « minimistes ». Norma E. Emerton, *The Scientific Reinterpretation of Form* (Londres : Cornell University Press, 1984), 89-90.

⁸ William Newman, *The Summa Perfectionis of Pseudo-Geber*, 321-326 (ici 326).

⁹ William Newman, *The Summa Perfectionis of Pseudo-Geber*, 280-281: « Huius utique videmus manifestam experientiam in spirituum sublimatione, quoniam cum in eis per sublimationem fiat subita resolutio, non separatur humidum a sicco nec siccum ab humido ita quod dividatur in partes totaliter mixtionis eorum, sed tota ascendit ipsorum substantia aut parum ex eorum componentibus dissolvatur ». Voir le commentaire de Newman, dans William Newman, *Atoms and Alchemy : Chymistry & the Experimental Origins of the Scientific Revolution* (Chicago : The University of Chicago Press, 2006), 29.

¹⁰ William Newman, *Atoms and Alchemy : Chymistry & the Experimental Origins of the Scientific Revolution*, 23-45.

¹¹ Edmund Darmstaedter, *Die Alchemie des Geber* (Berlin: Julius Sprenger, 1922).

¹² Barbara Obrist, « Alchimie médiévale, matière et corpuscularisme : quelques questions », à paraître en 2010 dans le *Bulletin de philosophie médiévale*, 51 (2009).

¹³ Antoine Calvet, « Qu'est-ce que le corpus alchimique attribué à maître Arnaud de Villeneuve ? », *Arxiu de Textos Catalans Antics*, 23/24 (2004-2005): 435-56.

¹⁴ Ms. Turin, Biblioteca nazionale universitaria, E IV 22, XIVe-XVe siècle, f. 2-22v. Voir aussi éd. Jean Jacques Manget, *Bibliotheca chemica curiosa*, I, (Genève, Tournes, 1702): 662-76.

¹⁵ *Rosarius philosophorum*, I, chap. VI : « Ex rebus ergo corporalibus maxime convenientibus in natura, necessario est medicinam colligere. Unde oportet quod ipsa medicina illis in natura conveniat et eis in profundo maxime cohereat. Itaque diminutum quodque perfecte compleat et etiam quod mercurius per minima misceatur ante illius fugam ». Cf. ms. Turin, E IV 22, f. 4v (Jean Jacques Manget, *Bibliotheca chemica curiosa*, I, 664b).

¹⁶ *Rosarius philosophorum*, II, chap. XXVIII : « Cum vero triginta partes aque sue rubee fuerint secum, per hunc modum fixate, tunc imbibatur cum oleo suo rubeo imbibitione rubea et sublimetur, vice post vicem cum eo, donec totum figatur deorsum, et pone ipsam per diem et noctem in igne tepidissimo, ut melius depuretur et figatur in eo. Hinc extrahe et cera ipsum in crucibolo super ignem lentum cum oleo suo rubeo gutando gutam ad gutam donec fundatur ut cera sine fumo et fiat unum cum eo stans et penetrans, profundius tingens et permanens. Proice ergo unum pondus de ipso supra mille partes lune, vel mercurii abluti cum sale et aceto, et fiet sol verissimus in omni examinatione, bonus et melior valde quam de mineria productus, quia aurum et argentum ipsius elixiris excedit aurum et argentum de mineria in omnibus suis proprietatibus et speciebus ». Cf. ms. Turin, E IV 22, f. 20v (Jean Jacques Manget, *Bibliotheca chemica curiosa*, I, 674^a).

¹⁷ Les chapitres 28, 59, 81, 92 de la *Summa perfectionis* sont repris respectivement aux chapitre 4 de *Rosarius*, I (*Theorica*) et chapitres 28 et 32 de *Rosarius* II (*Practica*).

¹⁸ Newman parle de la *Summa* comme renfermant « the most exact and comprehensive descriptions of metallurgical assaying in the Latin Middle Ages ».

¹⁹ Marie Dominique Chenu, *La Théologie au douzième siècle* (Paris : Vrin, 1976) : 342. Marie Dominique Chenu, *Introduction à l'étude de saint Thomas d'Aquin* (Paris : Vrin, 1993) : 255-258, ici 256.

²⁰ William Newman, « L'influence de la *Summa perfectionis* du pseudo-Geber », dans *Alchimie et Philosophie à la Renaissance*, ed. Jean-Claude Margolin et Sylvain Matton (Paris : Vrin, 1993), 65-77.

²¹ Lazarus Zetner, *Theatrum Chemicum* (Strasbourg, heredum Eberhard Zetzner, 1659-1661), IV : 515-542.

²² Cf. *supra*, n. 8, 9, 10.

²³ “Speculum alchimiae”, dans Lazarus Zetner, *Theatrum Chemicum*, chap. VII, 530 : « Est enim amicabile, et metallis placabile : ac medium conjungendi tincturas : quoniam miscetur cum ipsis per minima : et in profundo naturaliter adhæret eis, quia est de natura ipsorum. Veruntamen cum patre et matre miscetur facilius, quam aliis fratribus, vel parentibus : eo quod ipsi contiguit, et suam puram participat naturam : attamen non submergitur aliquid in ipso, nisi ejus pater ». À comparer à la *Summa*, § 28 (William Newman, *The Summa Perfectionis of Pseudo-Geber*) : 334 : « Est enim amicabile et metallis placabilis, et medium coniungendi tincturas ».

²⁴ Palerme, Biblioteca comunale, 4° Qq A 10, XIV^e siècle, f. 380v-389v. De fait, nous n'avons pas trouvé aux f. 385-385v (correspondant au chap. VII de la version de Zetner) la citation de Geber, alors même qu'au f. 385, une définition « gébérienne » de la *sublimatio* est donnée : « sublimatio est elevatio partium subtilissimarum a partibus grossis ». Lazarus Zetner, *Theatrum Chemicum*, 528.

²⁵ Ms. Palerme, f. 383-383v : « Ces opérations [dictées par Geber] sont nécessaires : elles rendent les hommes plus subtils pour découvrir la perfection » (*Iste operationes sunt utiles qui reddunt homines magis subtiles ad perfectionem invenire*).

²⁶ Dans le *Speculum*, l'influence de la *Summa perfectionis magisterii* se mêle à celle du *Secret des Secrets* du pseudo-Aristote, d'inspiration plus magique.

²⁷ William Newman, *Summa perfectionis*, 580-5. William Newman, « L'influence de la *Summa perfectionis* du pseudo-Geber », 67.

²⁸ Venise, Biblioteca nazionale Marciana, VI 214, 1472, f. 173 : « sic enim spiritus penetrabit corpus et fit mixtio per minima ».

²⁹ William Newman, « L'influence de la *Summa perfectionis* du pseudo-Geber », 69.

³⁰ William Newman, "The Genesis of the *Summa perfectionis* », *Archives internationales d'histoire des sciences*, 35 (1985): 240-302, ici 251.

³¹ Pierre Kibre, « The *Alkimia minor* ascribed to Albertus magnus », *Isis* 32 (1947): 267-300, voir 290 : « et alterius qui dicit, si sciveris spiritus et corpora summe depurata coniungere per minima perfectionis opera tibi indubitanter complebuntur de predicta medicina una super 50 album in rubeum mutat mutatione perfecta ».

³² *Ibid.*

³³ Pierre Kibre, « Albertus magnus, *De occultis naturæ* », *Osiris* 13 (1958): 157-183.

³⁴ Pierre Kibre, « Albertus magnus, *De occultis naturæ* », 177.

³⁵ Pierre Kibre, « Albertus magnus, *De occultis naturæ* », 178 : « Restat modo etiam videre de ingenio quod possit per minima commisceri. Super quo philosophorum processit Summa. Nam quidam dixerunt quod totalis adinctio fiat cum solutione, quia cum igne et solutione. Quidam cum igne solo quorum omnium diversitates requiras in Libro perfecti magisterii quam propter in hiis non insisto. Sed in hoc opere teneo cum illis qui cum igne solum admiscendo procedunt. Moneo vos attendere que diximus tamen abluta et munda et commiscens ea in unum fortiter et cum suo igne donec figantur. Itera donec fiat unum corpus homogeneous ».

³⁶ Lynn Thorndike, *A History of Magic and Experimental Science* (New-York : Columbia University Press, 1934) (ci-après : *H.M.E.S.*), III: 85-102.

³⁷ Wilfred Theisen, « John's Dastin Letter on the Philosopher's Stone », *Ambix* 33 (1986): 78-87.

³⁸ Jean Jacques Manget, *Bibliotheca chemica curiosa* (Genève: Chouet, 1702), II, cap. IX: 316b : « Aquila ergo volans per aerem, et bufo gradiens per terram est magisterium ».

³⁹ Jean Jacques Manget, *Bibliotheca chemica curiosa*, 312a : « Medicinam nostram necessario ex iisdem esse assumendam, quæ argento vivo maxime adherent in profundo ejus et ei per minima commiscuntur ante illius fugam : argentum autem vivum argento vivo magis adhæret, et eidem magis amicitur, post illud vero aurum, postea argentum ».

⁴⁰ Cf. Rosarius, I, chap. IV : « Et est amicabile et metallis placabile ac medium coniungendi tinturas, quoniam miscetur per minima cum ipsis et etiam in profundo naturaliter adheret eis, quia est de natura ipsorum. Verumtamen cum Sole et Luna miscetur faciliter, eo quod ipsa magis suam puram participant naturam ». Cf. ms. Turin, E IV, 22, f. 3v (Jean Jacques Manget, *Bibliotheca chemica curiosa*, I, 663b).

⁴¹ William Newman, *Summa perfectionis*, 334.

⁴² Jean Jacques Manget, *Bibliotheca chemica curiosa*, II, 320b.

⁴³ Lynn Thorndike, *H.M.E.S.*, III, 85-87.

⁴⁴ Wilred Thiesen, « John Dastin's Letter on the philosopher's stone », 78-87.

⁴⁵ Sur l'intérêt de citer ou de ne pas citer une thèse corpusculaire, N. Emerton note que cette dernière n'est donnée que dans le cadre strict d'un processus chimique et biologique, et non dans un contexte plus large de philosophie naturelle. Elle vient toujours en complément d'autres explications (hylémorphisme, éléments et théorie des qualités). Norma E. Emerton, *The Scientific Reinterpretation of Form*, 90.

⁴⁶ Lynn Thorndike, *H.M.E.S.*, III, 95-99, spéc. 98. Quant à la *Visio* de Dastin (Jean Jacques Manget, *Bibliotheca chemica curiosa*, II, 324-326), il s'agit d'une allégorie développée sous forme de dialogue sans qu'une quelconque théorie alchimique soit clairement décrite. Sur Dastin, outre Thorndike, voir Joachim Telle, « Dastin », *Lexikon des Mittelalters*, III (1986): 573-574 ; Wilferd Theisen, « John Dastin : The Alchemist as co-creator », *Ambix* 38 (1991): 73-78 ; Pacale Barthélemy et Didier Kahn, « Les voyages d'une allégorie alchimique », dans *Comprendre et maîtriser la Nature au Moyen Âge, Mélanges d'histoire des sciences offerts à Guy Beaujouan*, ed. École pratique des hautes études (Genève : Droz, 1994): 481-530, ici 510-511.

⁴⁷ Lynn Thorndike, *H.M.E.S.*, III, 87-88. Lazarus Zetner, *Theatrum Chemicum*, III, 659-665. Le *Libellus aureus* (inc. : « Testatur ad credendum ») est conservé dans trois manuscrits anglais du XIV^e siècle et trois du XV^e siècle. Dans la version imprimée de Zetner, ce texte précède le *Rosarius* de Dastin (inc. « Desiderabile desiderium »), comme dans deux manuscrits parmi ceux relevés par D. W. Singer. Dorothea W. Singer, *Catalogue of Latin and Vernacular Manuscripts in Great Britain and Ireland dating before the XVI Century* (Bruxelles: Union Académique Internationale, 1928-1931) I, n° 285. Le contenu du texte varie quelque peu d'un manuscrit à l'autre, et de ces versions à l'imprimé de Zetner. Le témoin manuscrit de Cambridge University, Trinity College, 1122, f. 36v-38v, XIV^e s., serait le plus proche de la version imprimée.

⁴⁸ Lazarus Zetner, *Theatrum Chemicum*, 659.

⁴⁹ Lazarus Zetner, *Theatrum Chemicum*, 660.

⁵⁰ William Newman, « L'influence de la *Summa perfectionis* du pseudo-Geber », 71-72.

⁵¹ Michela Pereira, *L'Oro dei Filosofi : Saggio sulle idee di un alchimista del Trecento* (Spolète : Centro italiano di studi sull'alto medioevo, 1992), 200-201.

⁵² William Newman, *Gehennical Fire : the lives of George Starkey, an American Alchemist in the Scientific Revolution*, Cambridge (Mass.) : Harvard University press, 2003, 102 : « The Testamentum is replete with references to "subtle parts" and "minimal parts" by which the author intends real corpuscles ».

⁵³ Michela Pereira et Barbara Spaggiari, *Il « Testamentum » alchemico attribuito a Raimondo Lullo* (Florence : SISMEL, 1999).

⁵⁴ William Newman, « L'influence de la *Summa perfectionis* du pseudo-Geber », 71.

⁵⁵ Jean Jacques Manget, *Bibliotheca chemica curiosa*, I, 715^a : « Retfage, non est aliud, quam diminutio partium grossarum in minutissimas partes et subtilissimas, vel reductio grossi in simplex ».

⁵⁶ Michela Pereira et Barbara Spaggiari, *Il « Testamentum » alchemico attribuito a Raimondo Lullo*, I, 42-44 : « Retfage non est alia res, nisi comminutio parcium grossarum aut reductio grossi in simplex ». Le catalan donne (p. 43) : « Retfage no és altra cosa nisi sinó comminació de grosses partides o reducció de gros en simple ».

⁵⁷ Jean Jacques Manget, *Bibliotheca chemica curiosa*, I, 737b : « Dictum humidum et dictum terrestre simul miscentur subtiliter, et per minimas, et insensibiles petias, sic ut minimum terrestris sicci et minimum humidi ad quantitatem unius grani de uno, et ad quantitatem similem de alio congregentur simul tali modo, quod unum nec aliud separetur a partibus generis sui, sicut per eorum sublimationem apparet manifeste ».

⁵⁸ *Ibid.* : « In qua certa et approbata experientia videtur, quod hoc totum volat et ascendit, vel in toto remanet inferius ». Michela Pereira et Barbara Spaggiari, *Il « Testamentum » alchemico attribuito a Raimondo Lullo*, I, 164.

⁵⁹ William Newman, « L'influence de la *Summa perfectionis* du pseudo-Geber », 72.

⁶⁰ Jean Jacques Manget, *Bibliotheca chemica curiosa*, II, 768^a : « Fili, sedes sua sunt pori et parva suarum aquarum foramina, que primo erant plene aere nimio subtilis, et post implentur de re se inspissantur ».

⁶¹ Michela Pereira et Barbara Spaggiari, *Il « Testamentum » alchemico attribuito a Raimondo Lullo*, II, 331.

⁶² Antoine Calvet, « Étude d'un texte alchimique latin du XIV^e siècle : le *Rosarius philosophorum* attribué au médecin Arnaud de Villeneuve (ob. 1311) », *Early Science and Medicine* 11 (2006): 162-206, ici 200-202.

⁶³ Le *Testamentum*, cependant, emprunte de nombreux passages au *Rosarius pseudo-arnaldien*. Nous y retrouvons par exemple le chap. 28 de la *Practica* (cf. *supra*, n. 16) au chap. 27 (Michela Pereira et Barbara Spaggiari, *Il « Testamentum » alchemico attribuito a Raimondo Lullo*, II, 10-20, p. 372). Curieusement, la mention « profundius » manque. Dans la version catalane, nous avons « profundant » et « profundans » dans celle de Manget (Jean Jacques Manget, *Bibliotheca chemica curiosa*, I, 775b).

⁶⁴ Michela Pereira, *L'Oro dei Filosofi : Saggio sulle idee di un alchimista del Trecento*, 111.

⁶⁵ *Ibid.*

⁶⁶ William Newman, « L'influence de la *Summa perfectionis* du pseudo-Geber », 72.

⁶⁷ pseudo-Raymond Lulle, *De secretis naturæ sive de quinta essentia* (Strasbourg : Balthazar Beck, 1541).

⁶⁸ Michela Pereira, *The Alchemical Corpus attributed to Raymond Lull* (Londres : The Warburg Institute, 1989), 13-14.

⁶⁹ Sur Petrus Bonus, voir Thorndike, *H.M.E.S.*, III, 147-162. Chiara Crisciani, « The Conception of Alchemy as Expressed in the "Pretiosa Margarita Novella" of Petrus Bonus of Ferrara », *Ambix* 20 (1973): 165-181.

⁷⁰ Jean Jacques Manget, *Bibliotheca chemica curiosa*, II, 1-80. Voir aussi Petrus Bonus da Ferrara, *Precioza Margarita Novella*, ed. Chiara Crisciani (Florence: La Nuova Italia Editrice, 1976).

⁷¹ Auguste Borgnet, *B. Alberti magni Opera omnia* (Paris : L. Vivès, 1890), V, *De mineralibus*, III, 60.

⁷² Jean Jacques Manget, *Bibliotheca chemica curiosa*, II, 3b : « si ergo scientia mineralium est vera, ergo et scientia alchemiæ est vera omnino ».

⁷³ *Ibid.*, 25b.

⁷⁴ *Ibid.*, 31 : « Unde Geber in Summa sua : Ars nostra in potentia Dei reservatur ».

⁷⁵ *Ibid.*, 71^a.

⁷⁶ *Ibid.*, 72.

⁷⁷ *Ibid.*, 72 : « Unde sciendum quod in generatione metallorum est duplex humiditas, viscosa, et unctuosa : una extrinseca, quæ non devenit ad unionem totalem cum terrestribus partibus rei, et hæc inflammabilis est, et sulphurea, et alia [...] Et hæc viscosa est incombustibilis in suis partibus terreis tenuissimis, non inflammabilium, adæquata ut commixta commixtione forti, taliter, ut minimum unius sit idem factum cum minimo alterius, et unius plurimum cum plurimo alterius, et facta sunt a propria digestionem argenti vivi ».

⁷⁸ *Ibid.* : « Est ergo materia metallorum omnium prima humidum viscosum, incombustibile, subtile, incorporatum terrestri subtili, æqualiter et fortiter commixto per minima in cavernis terræ mineralibus ».

⁷⁹ Jean Jacques Manget, *Bibliotheca chemica curiosa*, II, 388-409. Lynn Thorndike, *H.M.E.S.*, III, 611-627.

⁸⁰ William Newman, *Gehennical Fire : the lives of George Starkey, an American Alchemist in the Scientific Revolution*, 105.

⁸¹ Jean Jacques Manget, *Bibliotheca chemica curiosa*, II, 401^a : « Dicis quod forma auri perficitur in eo virtute cœlestium, et maxime solis : verum pace tua ac reverentia dixerim, non ita sentiendum esse. Nam cum philosophice credendum sit aurum nihil aliud esse, quam mercurius anatizatum, id est, æqualiter digestum in visceribus terræ mineralis ».

⁸² Jean Jacques Manget, *Bibliotheca chemica curiosa*, II, 403^a : « Sol igitur non est præcipua causa auri, aut forma ejus, licet sit in eis similitudo nominum, quia sicut Sol est calidior cæteris planetis, sic aurum calidius est cæteris metallis, et consimili proprietatum differentia ».

⁸³ La thèse astrale en alchimie provient d'Albert. Auguste Borgnet, *B. Alberti magni Opera omnia*, V : « De mineralibus, » III, 1, 5, 65b.

⁸⁴ Jean Jacques Manget, *Bibliotheca chemica curiosa*, II, 405b : « Cujus causa ponderis est permanentia soliditatis terræ et aquæ et solutio aquæ homogenæ cum terra, quia aqua solvit terram homogeneam. Item causa ponderis est intrinseca eorum per minima permixtio, quia aqua non patitur terram poros habere tam in auro quam in argento vivo ».

⁸⁵ Bernard de Trèves évoque le chap. 28 de la *Summa*. Jean Jacques Manget, *Bibliotheca chemica curiosa*, II, 407b : « Hoc enim Geber docet, quando dicit, ut tua epistola scripsistis, si quis sulphur nostrum sciverit conjungere et amicari corporibus, invenit unum de secretis maximum et unam viam perfectionis ».

⁸⁶ Jean Jacques Manget, *Bibliotheca chemica curiosa*, II, 406^a : « Lapis enim noster non habet formam formabilem, ut vegetativam, sed tantum habet formam formatam, quæ forma est ipsamet elementa, propterea quod homogeneous est ».

⁸⁷ *Ibid.*, 407-408 : « Ut notatur Arnaldus de Villanova dixisse, libro, quem Rosarium nominavit : quod Mercurius crudus : id est, argentum vivum, quod sua natura est frigidum et humidum, per sublimationem efficitur calidum et siccum. Deinde per revivificationem fit calidum et humidum simile complexioni humanæ ».

⁸⁸ *Ibid.*, 407b : « Et est aqua clarissima, sicuti oculi lachryma spiritualis facta, etc., quod facit aurum merum esse spritum. Nam corpus non penetrat corpus, sed subtilis substantia spiritualis congelata quæ corpus penetrat et colorat ». À comparer au *Speculum medicinæ*, dans *Arnoldi Villanovani, Opera omnia* (Bâle : Conrad Waldkirch, 1585), chap. XXXI, col. 107F : *De medicina subtiliativa et resolutiva*. L'idée d'Arnaud est qu'une médecine doit être subtile, conforme à la complexion humaine, réduite à la forme d'une vapeur, pour agir sur les humeurs. D'où, dit Arnaud, l'erreur des alchimistes qui pensent appliquer la médecine des métaux (non subtiliative et non conforme) à celle des organismes humains.

⁸⁹ Il existe deux versions de la *Correctio* (ou *Correctorium*) (Jean Jacques Manget, *Bibliotheca chemica curiosa*, II, 165-171 et 266-275). La première, anonyme, paraît moins longue et moins étoffée que celle reproduite aux pages 266-275. La Bibliothèque nationale en possède une version manuscrite, abrégée, attribuée à Bernard de Trèves : Paris, BnF, lat. 14006, XV^e siècle, f. 35v-40v.

⁹⁰ Isdoro Carini, *Sulle scienze occulta nel Medio Evo et sopra un codice della famiglia Speciale* (Palermo : Stamperia Perino, 1872) (repr. Arnaldo Forni Editore, 1983), XX, n° 39. Lynn Thorndike, *H.M.E.S.*, III, 106-107. Sur Ricardus Anglicus, voir Joachim Telle, « Ricardus Anglicus », *Die deutsche Literatur des Mittelalters. Verfasserlexikon*, ed. Kurt Ruh (Berlin : W. De Gruyter, 1992), VIII, col. 38-41.

⁹¹ Auguste Borgnet, *B. Alberti magni Opera omnia*, V, 69^a.

⁹² Jean Jacques Manget, *Bibliotheca chemica curiosa*, II, 168b.

⁹³ *Ibid.*, 171b.

⁹⁴ *Ibid.*, 168b.

⁹⁵ *Ibid.*, chap. XI, 170a-b et chap. XIV, p. 272a (il est alors question de la peste). Il s'agit d'un lointain écho d'un exploit médical réalisé sur la personne du pape Boniface VIII (et non d'Innocent). En 1301, lors de son passage à la cour pontificale, Arnaud aurait soigné la gravelle du Saint Père avec un sceau astrologique en or appliqué sur les reins. Des chercheurs (Juan Antonio Paniagua, Nicolás Weill-Parot) ont supposé que l'emploi d'une médecine alchimique, mentionnée dans la *Correctio*, masquait celui du sceau astrologique, mal accepté par les cardinaux. La *Correctio* contient une deuxième allusion à la renommée d'Arnaud comme médecin et comme alchimiste, celle où Ricardus Anglicus évoque une transmutation de « baguettes », ici attribuée à saint Jean (Jean Jacques Manget, *Bibliotheca chemica curiosa*, II, 170b et p. 272b), dont le Catalan fut crédité par une rumeur notée par le canoniste Jean d'Andrea, et ce en présence de cardinaux. Il résulte de ces éléments que la *Correctio* a peut-être été conçue dans un milieu proche d'Arnaud de Villeneuve. En témoigneraient ces évocations

déformées de son activité à la cour pontificale dont le souvenir est resté marqué par une cure extraordinaire. Le fait que le *Rosarius* ne soit pas cité en clair pourrait indiquer, en revanche, que la *Correctio fatuorum* a été composée avant que ce dernier soit attribué à Arnaud de Villeneuve : entre 1360 et 1380. Juan A. Paniagua, *Studia Arnaldiana : Trabajos en torno a la obra médica de Arnau de Vilanova, c. 1240-1311* (Barcelone : Fundació Uriach 1838, 1994), 417-418 et 471 ; Nicolás Weill-Parot, « Arnaud de Villeneuve et les relations possibles entre le sceau du lion et l'alchimie », *Arxiu de Textos Catalans*, 23/24 (2004-2005): 269-280.

⁹⁶ *Ibid.*, 170a : « De sene facit juvenem et reviviscere facit, servat sanitatem, corroborat naturam et omnem aegritudinem corporis expellit, venenum a corde declinat, arterias humectat, contenta in pulmone dissolvit, breviter totum corpus habile reddit ». Cf. *ibid.*, 272a.

⁹⁷ Jean Jacques Manget, *Bibliotheca chemica curiosa*, II, 324b.

⁹⁸ Michela Pereira a dressé un tableau comparatif de cette phrase dans les versions du pseudo-Bacon, du *De vita philosophorum* et de l'*Epistola ad Jacobum*. Michela Pereira, « Arnaldo da Villanova e l'alchimia. Un'indagine preliminare », *Arxiu de Textos Catalans Antics*, 14 (1995): 95-174, ici 165-171.

⁹⁹ Norma E. Emerton, *The Scientific Reinterpretation of Form*, 77 : « Aristotle's theory of mixtion held the field without a rival. Its limitation in face of the increasingly wide variety of chemical phenomena that became known during the Middle Ages was undoubtedly a reason why mixtion theory rarely emerged from the study into the laboratory ».

¹⁰⁰ Robert Halleux, « L'alun dans la littérature des recettes du I^{er} au XII^e siècle », in *L'Alun de Méditerranée*, ed. Philippe Borgard, Jean P. Brun et Maurice Picon (Naples – Aix-en-Provence: Centre Jean Bérard, 2005), 9-11, ici 9.

¹⁰¹ Sur Sedacer, voir Pascale Barthélemy, *La Sedacina ou l'Œuvre au crible, L'alchimie de Guillaume Sedacer, carme catalan de la fin du XIV^e siècle*, (Paris-Milan, SÉHA-Archè, 2002). Sur Léonard de Maurperg, voir Jean Corbett, « L'alchimiste Léonard de Maurperg (XIV^e siècle), sa collection de recettes et ses voyages », *Bibliothèque de l'École des Chartes*, 97 (1936), 131-141.

¹⁰² Pascale Barthélemy, *La Sedacina ou l'Œuvre au crible, L'alchimie de Guillaume Sedacer, carme catalan de la fin du XIV^e siècle*, II, chap. XVII, 7-10, 342-343.

¹⁰³ Pierre Kibre, « The *Alkimia minor* ascribed to Albertus magnus », 298-300 : « de compositione omnium predictorum ad medicinam perfectam capitulum 32^m ». La recette du pseudo-Albert (la dernière du recueil et la plus longue) obéit au même schéma que celui de Sedacer : une première « pierre très rouge » devient une « eau claire et aussi rouge que le sang » ; celle-ci est alors mélangée à une deuxième eau (le composé intermédiaire) fabriquée à partir des transformations qui ont affecté le vitriol, le safran et le fer (les matériaux de base). De là vient la transmutation.

¹⁰⁴ La *Summa* paraît vers 1486-1488 et bénéficiera d'une vaste diffusion. Didier Kahn, *Alchimie et Paracelsisme en France (1567-1625)* (Droz : Genève, 2007), 54-55, 60-62. Le *Rosarius* est régulièrement édité dans les différents *Opera omnia* d'Arnaud de Villeneuve (de 1504 à 1586), puis dans les collections d'œuvres

alchimiques comme celle de G. Gratarolo (1561), etc. Antoine Calvet, « Les *alchimica* d'Arnaud de Villeneuve à travers la tradition imprimée (XVI^e – XVII^e siècles). Questions bibliographiques », dans *Alchimie : art, histoire et mythes*, ed. Silvain Matton et Didier Kahn (Paris-Milan : SÉHA-Archè, 1995), 157-290. La *Responsio* de Bernard de Trèves est publiée en 1564 dans : Robert Duval ed., *Morieni Romani [...] De Re Metallica* (Paris : Guillaume Guillard, 1564), 35-66v, rééditée à Bâle de 1572 à 1610 dans les trois éditions successives de l'*Artis Auriferæ*, traduite de là en allemand en 1613, en français en 1626, etc. John Ferguson, *Bibliotheca Chemica*, Glasgow: Jas. Maclehose and Sons, 1906), I, 102-103, et Didier Kahn, « Recherches sur le Livre attribué au prétendu Bernard le Trévisan », dans *Alchimia e Medicina nel Medioevo*, Chiara Crisciani et Agostino Paravicini Bagliani ed. (Florence, Sismel, 2003), 265-336, ici 268-269.

THE *TURBA PHILOSOPHORUM* AND ITS FRENCH VERSION (15TH C.)

DIDIER KAHN,
CNRS, PARIS (CELLF 17^e-18^e)

The *Turba philosophorum*, a Latin treatise translated no later than the beginning of the 13th century from an Arabic text written around 900,¹ appears in its title as being the proceedings of an alleged «third Pythagorean congress», the philosopher Arisleus having, on behalf of his master Pythagoras, assembled the disciples of the latter to discuss and clarify the sayings of the Ancients. The treatise, shaped in a dialogic form, consists of two parts; the first contains nine cosmologic, doxographic, yet alchemized discourses (*sermones*), attributed to speakers whose puzzling names, heavily altered since their translation into Latin, actually correspond to nine Presocratic philosophers: Eximiedrus (Anaximander), Eximiedrus again (Anaximenes), Anaxagoras, Pandulfus (Empedocles), Arisleus (Archelaos), Lucas (Leucippos), Locustor (Ecphantos), Pythagoras, and Eximenus (Xenophanes). The second part is entirely alchemical, with occasional references to the first part.²

Although the *Turba* has been the subject of several in-depth studies, Martin Plessner showed half a century ago that its Latin text still deserves further research.³ Besides the Latin text, vernacular versions of this treatise are known, in French as well as in German, English, and perhaps Italian.⁴ In all cases, the earliest translations date back to the 15th century. The German versions have been recently briefly discussed by Joachim Telle, who mentioned several manuscripts unknown to Ruska, but not yet submitted to closer examination.⁵ As to the French version, it was never accurately nor seriously discussed. A careful study of this French *Turba* shows, first, as we shall see, that the Latin model followed by its anonymous translator was none of the different known standard versions that Moritz Steinschneider, and Ruska after him, had identified. Furthermore, it appears that the French version includes several discourses that are not to be found in any known Latin version of the *Turba*. Some of those disc-

ourses rest, nevertheless, on Latin models, often consisting of small textual units, easily overlooked by the authors of detailed catalogues of manuscripts. The existence of such Latin sources brings about new questions, not only on the French version of the *Turba*, but even on its Latin textual tradition.

I would like, first, to bring the *Turba* to the attention of specialists of early modern alchemy.

The *Turba philosophorum* and early modern alchemy

It would be a historical mistake to consider the *Turba philosophorum* a dusty relic from the Middle Ages, largely superseded in the 16th and 17th century by early modern « chemical philosophy ». On the contrary, the *Turba* has been omnipresent in early modern alchemy. Its printed tradition consisted of no less than three different Latin editions (today known as versions A, B and C) from 1572 to 1622,⁶ along with two German translations (1597, 1613)⁷ and a French translation (1618),⁸ all of which were reprinted one or several times until the 18th century (no English translation having been published before the end of the 19th century).⁹ Furthermore, the *Turba* editors, its translators, and the collectors of its manuscripts often were not only alchemists, but Paracelsian physicians, deeply involved in the *Respublica chemica* and in the more recent achievements of early modern alchemy. Thus the first *Turba* editor in 1572, Guillaume Rascalon (1526 - after 1591), a French physician and alchemist, was acquainted with all the first German Paracelsians, and was a familiar of their common patron, Count Palatine Ottheinrich (1502-1559).¹⁰ When the 1597 German translation was reissued in 1614, it appeared in a collection edited by the Paracelsian physician Joachim Tancke (1557-1609), an editor of many alchemical texts, befriended with the well-known Joseph Du Chesne (1546-1609) throughout the frontiers.¹¹ As to the first editor of the French *Turba* (1618), Millet de Bosnay, he had already performed the pioneering first French translation of Michael Sendivogius' *Novum lumen chemicum* as early as 1609,¹² not to speak of Pierre Borel, an encyclopedic scholar and antiquarian, interested in old French language as well as alchemy, medicine, astronomy, and physics, author of the famous *Bibliotheca Chimica* (1654). An eager collector of *alchemica*, Borel acquired the French *Turba* manuscripts formerly owned by Millet de Bosnay, along with a host of other alchemical manuscripts, before they passed on to the « fonds Caprara » now preserved in Bologna University Library.¹³

As a matter of fact, the *Turba* could hardly escape the attention of early modern alchemists : its obvious goal was to clarify the obscure sayings of the ancient Sages.¹⁴ Needless to say, the *Turba* does not stand out as a model of clarity, but it offered stimulating insights on the different ways to understand and decipher the language of old alchemists. As it was constantly available in print since 1572, it was quite influential, all the more since its nine first cosmological discourses could easily meet the strong concern with natural philosophy of early modern alchemists and Paracelsians—just as did, at the same time, the pseudo-Lullian *Testamentum*.¹⁵ The most famous *Turba*-related text, the *Visio Arislei*, which consists in relating the allegorical marriage of Gabritius and Beya, should also be mentioned, since it is the most obvious source of one of the three so-called « Rosicrucian manifestoes » : J. V. Andreae's *Chymical wedding of Christian Rosenkreutz* (composed around 1605, printed in 1616).¹⁶ And a quick look into one of the best known pieces of early seventeenth-century alchemy, Michael Maier's *Atalanta fugiens* (1617),¹⁷ suffices to confirm that medieval texts such as the *Turba philosophorum*, far from being superseded in early modern times, were not less successful than the many Paracelsian treatises that were then published.¹⁸

Let us now consider the French version of the *Turba*. I have been led to a close examination of it as I realized that it was one of the main sources of Bernard le Trévisan. I do not speak here of the fourteenth-century alchemist Bernard of Trier, author of a Latin *Responsio ad Thomam de Bononia* (1385), but of the French anonymous alchemist from the end of the 15th century who borrowed Bernard's already famous name to write—this time in French—a pseudo-autobiographical *Livre* that was to become one of the most successful alchemical tracts of early modern times, its theoretical part being derived from Bernard of Trier's mercury-alone theory, and its *practica* consisting of a mere allegorical part : the famous allegory of the fountain and the bath of the king.¹⁹ This treatise, inspired in many ways by the French version of the *Turba*—even in its structure, as we shall see later—became so widely known in the 16th century that it formed the very model of D. Zecaire's *Opusculé tres-eccellent, de la vraye philosophie naturelle des metaulx* (a text itself influenced by the French *Turba* as well)²⁰, and within a few years, this *Livre de venerable Docteur Allemant Messiere* [sic] *Bernard conte de la Marche Trevisane* was to be translated in no less than four different languages : three times in Latin, several times in English and German, three times in Italian.²¹ Thus it happened that even the French *Turba* had, thanks to this text, a wide (although underground) diffusion from the mid-sixteenth century onwards,

even if its French origin could never be recognized throughout the many translations of Bernard le Trévisan's *Livre* from the French.

An example of the influence of the French *Turba* on Bernard le Trévisan's *Livre* is the changing colours in the allegorical bath of the king, obviously derived from the discourse of a certain Arkimius :

Bernard le Trevisan (see n. 19 above), pp. 186-187 :

Et je luy demanday, combien fault il qu'ilz attendent ? Et il commença à soubzrire, et dire ainsi. Sachez que le Roy y entre tout seul [*i.e.* into the fountain], et nul estrangier ne nul de ses gens n'y entrent dedans la fontaine, combien qu'elle les ayme bien, ilz n'y entrent point. Car ilz ne l'ont encores point deservy, mais toutesfois quant le Roy y est entré premierement, il se despouille sa robe de drap de fin or batu en feuille toute couverte, et la baille à son premier homme, qui s'appelle Saturne. Adonc Saturne la prent et la garde 40 jours ou 42 au plus quant une fois il l'a eüe. Après le Roy devest son pourpoint de fin velours noir et le donne à son second homme, qui est Jupiter, et il le luy garde vingt jours bons. Adoncques Jupiter par le commandement du Roy le baille à la Lune, qui est sa tierce personne belle et resplendissante, et le garde 20 jours. Et ainsi le Roy est en sa pure chemise blanche, comme neige, ou fine fleur, plus que sel fleury. Alors il devest sa chemise blanche et fine, et la baille à Mars, lequel pareillement la garde 40 (et aulcunes fois 42) jours. Et après cela Mars (par la volonté de Dieu) la baille au Soleil jaulne, et non pas claire, qui la garde 40 jours. Et après vient le Soleil tres beau et sanguin, qui la prend et bien tost. Et adoncques celluy la garde. Et je luy diz. Et puis que devient tout cecy? — Adonc la fontaine se ouvre. Et puis ainsi comme elle leur a donné la chemise, la robe, et le pourpoint, elle à trestous (à un coup) leur donne sa chair sanguine vermeille et tres haultaine à manger. Et alors ont ilz leur desir.

La Turbe des philosophes, [discourse 47] :

Arkimius. Saichez que Mercure est caché soubz les raiz du Soleil, et la Lune le luy fait perdre, et le prend, et domine sur luy. Mais toutesfois le Souleil luy a donnée cette domination pour deux jours. Apres elle la rend au Soleil, et va en declinant. Et Venus est messagier du Soleil, et luy fait reavoir sa seigneurie. Et Mars en est le presenteur. Et alors quant le Soleil ha son regne, pour la peine que ses six compaignons ont prinse, il leur donne tres beaulx vestemens de sa livree. Et par ainsy povez savoir que le dieu du Soleil n'est point ingrat à ses serviteurs, comme vous voyez. Et qui a veu cecy et l'entend bien en parle seurement.²²

I naturally tried to check the Arkimius text in the Latin *Turba*. Then problems began to arise. The name « Arkimius » is *not* found in any of the

three Latin printed versions. Whence did it come, then ? This innocent question led me into a much larger research, the results of which I shall now present. I have first to recall the *status quæstionis* about the Latin *Turba*.

The different versions of the Latin *Turba*

A hundred years ago, the Latin versions have been carefully examined successively by two scholars, Moritz Steinschneider and Julius Ruska. The former showed—and the latter confirmed—the existence of three distinct printed versions :

- *Version A*, consisting of 72 numbered discourses (*sermones*) written in the form of an often vivid dialogue.

- *Version C*, much alike to version A, but far shorter, although comprising 78 numbered discourses instead of 72.²³ The names of the speakers are sometimes different and the dialogic form has not been used as much as in version A.

- *Version B*, containing 78 discourses just like version C, and being scarcely shorter than it. Yet the discourses are not numbered, and they often differ in their order and in the names of the speakers from those in version A, the dialogic form being still less pronounced than in version C (discourses are only preceded by the name of the speaker followed or preceded by *ait*, *inquit*, or *respondit*). Version B also differs from the two others with some interventions involving the entire assembly of the philosophers (*Turba dixit*, etc.).²⁴

Thus, version B might seem to be, at first sight, a mere abridged rewriting of A. Yet, as Martin Plessner showed in his posthumous book published in 1975, the text of A may be significantly improved by some variants found in B. Sentences of A, ill translated from the Arabic, have been sometimes better translated in B, which implies that the *Turba* has been originally translated at least twice from the Arabic.²⁵

In addition, it should be specified that two doxographic discourses of the Latin *Turba* are not found in version B, as well as some other discourses, whereas the same version B sometimes twice repeats other discourses from version A.²⁶

Let us now examine more closely the French version.

The French version

The linguistic characteristics of the French version are not those of an early medieval text : it seems highly improbable that it might stem from

the 14th century. But it necessarily dates from the 15th century, since some of its discourses, not found anywhere else, prove to be direct sources of several key passages in Bernard le Trévisan's treatise²⁷—which, as we saw, dates from the end of the 15th century.

There are at least 18 manuscripts of the French version, almost all from the 16th and 17th centuries.²⁸ The most ancient (1537) has been written by the celebrated scholar Oronce Finé (1494-1555), once royal lecturer in mathematics at Paris University, who was deeply interested in many sciences, including alchemy.²⁹ Needless to say, a thorough examination of all variant readings is needed: besides variations on the place of the *Visio Arislei* (as we shall see later), the text of many discourses—such as discourse 34 (Vicarius) or 50 (Esminganus)—is obviously much corrupted and cannot be edited without a critical apparatus.³⁰ Since this task has not yet been undertaken, I will rely here on Finé's text, which often is clearly more correct than the printed one.

As we saw above, the French *Turba* was first published in 1618. In this edition, the discourses were numbered, with more or less accuracy, from 1 to 70 (actually 71, due to a mistaken numbering), thus following the model given by version C—a version well known since its first publication in 1572.

The French version has never really been studied, nor by Steinschneider, nor by Ruska, nor by Plessner. Yet Ruska had supposed that it rested on version A.³¹ He was quite right indeed, but the situation is actually more complex. Here is a first comparison between the French version and version A. This comparison is a mere superficial one: I shall only consider the names of the speakers and the place of their discourses in the work, without any regard yet to the content. The names of those speakers that are found almost at the same place in the two versions are printed here in bold, except if apparently similar discourses are actually completely different—which occurs, for instance, with French discourses 29 (= seemingly XXXVIII from version A) or 31 (= seemingly XXXIV from A), 59 or 60 (seemingly LXIX and LXXI from A). To make this comparison more obvious, I have used here Arabic instead of Roman numerals for the discourses of version A.

We can see that in the beginning of the text, both versions are very close, except that most of the doxographic discourses (I to IX) are lacking in the French text:

<i>French version</i>	<i>Version A</i>
1. Arisleus + Ismindrius	1. Arisleus + Iximidrus
2. Turba / Pythagoras	2. to 9. Exumdrus; Anaxagoras / Pythagoras; Pandolfus; Arisleus; Lucas; Locustor; Pythagoras / Arisleus; Turba / Eximenus
3. Arisleus	10. Arisleus
4. Parmenides	11. Parmenides
5. Lucas	12. Lucas
6. Vicarius	13. Pythagoras
7. Pythagoras	14. Acsubofen
8. Acsuboffes	15. Frictes
9. Sictis	16. Socrates
10. Socrates	17. Zimon
11. Zymon	18. Mundus

But from discourse 12 of the French version onwards, the sequence of the discourses is no longer the same. Less names of philosophers are common to both versions, and new names appear in the French version that are not found in any Latin version (they are here italicized in bold) : Morienus, Surus, Aristoteles, Arkimius, and even the *Visio Arislei*, which does not belong—according to Ruska—to the text of the *Turba* properly said, but is said to be a mere satellite of it (Ruska called this sort of small texts *Turbaliteratur im weiteren Sinne*).³²

12. Plato	19. Dardaris
13. Theophilus	20. Belus
14. Nocius	21. Pandolfus / Ardarius
15. Velleus	22. Theophilus
16. Bocostus	23. Cerus
17. Melotus	24. Bacoscus
18. Gregorius	25. Menabds
19. Vicarius	26. Zenon
20. Bonellus	27. Gregorius
21. Briemblus	28. Custos
22. Arisleus	29. Diamedes
23. Turba	30. Bacsen
24. Turba / Pythagoras	31. Pythagoras
25. Balcus	32. Bonellus
26. Sisticos	33. Nicarus
27. Bonellus	34. Bacsen
28. Sisticos	35. Zenon
29. Ephistus	36. Afflontus / Agadmon

30. Morienus	37. Bonellus / Cranses
31. Basenus	38. Effistus
32. Velleus	39. Bacsen
33. Azarus	40. Iargus
34. Vicarius	41. Zenon
35. Surus	42. Astanius
36. Basenus / Surus	43. Dardaris
37. Lanus	44. Moyses
38. Acsuboffes	45. Plato
39. Turba	46. Attamus
40. Theophilus / Pythagoras	47. Mundus
41. Theophilus	48. Pythagoras
42. Socrates	49. Belus
43. Senereleus / Socrates	50. Pandolfus
44. Aristoteles / Pythagoras	51. Horfolcos
45. Lucas	52. Ixumdrus
46. Nostius	53. Exumenus / Arras
47. Arkimius	54. Anaxagoras
48. Philosophus	55. Zenon
49. Danarius	56. Constans
50. Esminganus	57. Açratus / Anastratus
51. Nostius	58. Balgus
52. Isimindrius	59. Theophilus
53. Esminganus	60. Bonellus
54. Turba	61. Moyses
55. Archimus	62. Mundus
56. Ismindrius	63. Philosophus
57. Pythagoras	64. Pythagoras
58. Turba / Pythagoras / Turba	65. Horfolcos
59. Florus	66. Exemiganus
60. Brachus	67. Lucas
61. Zeno	68. Attamus
62. Lucas	69. Florus
63. Ismindrius / Turba	70. Mundus
64. Pythagoras	71. Bracus
65. La distinction de l'épître de Arisleus...	72. Philosophus
66. Pythagoras	
67. Arisleus	
68. Pythagoras	
69. Turba	

On the whole, then, the French version does not prove to be as close to version A as it seemed at first sight. Now Plessner, thirty years later than Ruska, had assumed that the French version rested on version B.³³ To clarify the point, I have compared the French version to each of the Latin versions, discourse after discourse (my numbering of the French version corresponds to a correct numbering of the French 1618 edition, but although discourses are numbered in many French manuscripts, MS. lat. 7147 of the BnF is not). The comparison clearly shows that Ruska was more right than Plessner, all the more since the French version often appears as a very vivid dialogue, just as version A. But I must add that most discourses of the French version are very short (between three and ten lines), and the French version, if compared with its Latin model while considering it a translation of this model, often proves to be poor, sometimes even disastrous (a typical feature of vernacular versions of alchemical texts, at least in French). But, as we shall see, despite these disappointing characteristics, the French version is by no means deprived of interest.

Here is the result of my detailed comparison.

<i>La Turbe des philosophes</i> (Paris, BnF, ms. lat. 7147)	<i>Turba A</i> (ed. Ruska)	<i>Turba B</i> (first of <i>Artis aurif.</i>)	<i>Turba C</i> (2 nd of Manget)
1. Arisleus + Ismindrius	Arisleus, Prolog. Sermo I (≈ first 3 lines)	Ø	Ø
(<i>Sermones I-IX</i> : Ø) (but see below, # 19, 32, 37, 40, 43, 44)	(<i>Sermones I-IX</i>)	(<i>Sermones IV-V</i> : Ø)	(<i>Sermones I-IX</i>)
2. Turba / Pythagoras	Sermo IX (≈ end)	Ø	
3. Arisleus	Sermo X		
4. Parmenides + Rev 6, 12 & 8,8	Sermo XI	Ø	Ø
5. Lucas	≈ Sermo XI (end)		
6. Vicarius	≈ Sermo XII (end) (= Lucas)	Ø	
7. Pythagoras + a small allegorical §	Sermo XIII (beg.)		
8. Acsuboffes	Ø	Ø	Ø
9. Sictis	Sermo XIV (part of)	Ø	Ø
10. Socrates	Sermo XV		
11. Zymon	Sermo XVI (parts of)		
12. Plato	Sermo XVII (1 st half)		
	Ø	Ø	Ø
	but Sermo XVIII (= Mundus) deals with the same matters (<i>gumma & lac</i>)		

As we have seen, the doxographic discourses (*sermones* I to IX) lack in the French version. This lacuna is not an accident, but, on the contrary, a distinctive feature of vernacular translations of alchemical treatises : the theoretical part of the original text is often suppressed, for vernacular translations are usually made for a different sort of readers, more interested in an immediate, practical use of the text than in theoretical speculation.³⁴ Our case is similar, even if—as we shall see— parts of the doxographic discourses I to IX have been interspersed here and there in the rest of the French *Turba*.

Another striking point is that, by no means, version B could have been used by the French translator, except perhaps in one single case ; the same is true for version C. The actual model is clearly version A, the wording of which differs from B as well as C.

In the first column, the passages not found in the Latin versions of the *Turba* are printed in bold. The second column (version A) displays the sources of the French version, in so far as version A is able to provide them. In the two last columns (versions B and C), I have contented myself with indicating the presence or absence (marked by the sign Ø) of the relevant passages. Whenever a square is empty, the discourse of B or C is quite the same as A (with differences in length as well as in style, that are not relevant for this study).

The first passage of the French version that is not found in the Latin *Turbæ* is remarkable : it is an alchemical interpretation of Revelation. Revelation had already been used in Latin medieval alchemy, e.g. in the *Aurora consurgens*, in the *Visio* by John Dastin, or in a short *Visio mystica* which took up the topic of the book sealed with seven seals.³⁵ But our text is the very first French text to display such an interpretation.

This passage has been built on the Latin version in a curious manner. We have first an approximate translation of the Latin text (in what follows, the words common to both versions are in italics). Then the passages from Revelation are suddenly inserted, but they seem to have originated from some words of the Latin version, misunderstood, taken up and transformed according to the sacred text (I print those words in bold) :

La Turbe des philosophes

Et prenez l'eau vive et la congelez dedens son corps, et en son soulfre qui ne brusle point. Et faictes nature blanche, et ainsy tout devient blanc. Et si vous cuysez encore plus, il fait rouge, et en couleur de sang. Et est signe que Dieu a faict tout son temps et vient pour glorifier les bons : et est le dernier signe de son advenement. Mais paravant ces heures le soleil perdra sa lumiere et sera obscur. Et la lune aura l'office du soleil, et puis semblable-

ment la lune obscurcira et *se tournera en sang et toute la mer*, et toute la terre se fendra [Rev. 6, 12 and 8, 8], et se leveront les corps des tombeaulx qui estoyent morts, et seront glorifiez, et auront la face glorieuse, plus reluisante mille fois que le soleil. Et sera le corps, et aussy l'ame, et l'esperit glorifiez, *rendans a Dieu graces que après tant de tormentz, peines et aultres tribulations, sont venuz a tel bien et perfection que jamais ne peuvent estre corrompuz ne separez.*

Si vous ne m'entendez, jamais ne estudiez, car vous estes hors du nombre des saiges. Je ne sçay plus cler parler. [...]

Version A, *sermo* XI (Parmenides)

(ed. Ruska, pp. 119-120) :

Et argentum vivum accipite et in magnesie corpore coagulate, vel in kuhul, vel in sulfure, quod non comburitur ; et facite ipsum naturam albam, ac aeri nostro imponite, *et album fit*, et si rubeum facitis, *rubeum fit, et si deinceps coquitis*, aurum fit. Dico, quoniam ***ipsum mare in rubeum vertit*** et auri collam. Et scitote, quod non vertitur aurum in rubedinem nisi per aquam permanentem, eo quod natura natura lætatur. Regite igitur ipsum coquendo humore, donec natura abscondita appareat. Ea igitur exterius apparente septies ipsum aqua imbuite coquendo, imbuendo, assando, donec rubeum fiat.

O illæ naturæ cœlestes, veritatis naturas nutu Dei multiplicantes ! O natura illa fortis, quæ naturas vincit suasque gaudere et lætari facit naturas ! *Hæc igitur est specialiter, cui Deus ejus posse tribuit, quod ignis non potest. Ideoque magnificavimus et honoravimus eam, qua nihil est pretiosius in vera tinctura, cui simile vel par minime invenitur. Ipsa est veritas, omnes sapientiam investigantes*, liquefacta enim cum suis corporibus altissimum operum operatur. Numquid si veritatem sciretis, non mihi multipliciter gratias ageretis ? [...] *Et si unum sit fugiens, alterum vero ignem patiens, utrumque utrique junctum ignem patitur.* [...] Et scitote [...] quod res una superat decem, et quod sulfur nostrum omnia comburit corpora.

Returning to the comparative table, we can see that discourses 15, 16, 17, 18 and 20 still coincide more or less with the Latin version, the sequence of the discourses being somewhat modified (in the second column, the Roman numerals showing this continuity are printed in bold and italics). Discourse 21 belongs to those the source of which I could not identify ; but it might correspond to several different passages from the Latin *Turba*. On the other hand, discourse 14, made up with two medical, quite common remarks, does not correspond to anything known in the Latin versions. The same is true for discourse 19, the last sentence of which is, nonetheless, obviously borrowed from the first discourse of the

Latin *Turba*, that is from one of the nine cosmological discourses missing in the French version at their normal place.

As to discourse 22, it has been directly translated from one of the peripheric texts of the Latin *Turba*: the fifth enigma of the *Allegoriæ super librum Turbæ* (in Manget, I, p. 496b), the manuscript tradition of which has not yet been studied.

I did not find the source of discourses 25 and 26, but the former definitely does not stem from the Latin *Turba*.

<i>La Turbe des philosophes</i>	<i>Turba A</i>	<i>Turba B</i>	<i>Turba C</i>
14. Nocius (on <i>digestiones duo in homine & urina alba et rubea</i>)	Ø (Sermo XXIII = Cerus)	Ø	Ø
15. Velleus	≈ <i>Sermo XX</i> (= Bellus) + <i>Sermo XXIV</i> , altered (= Bacostus)		
16. Bocostus	≈ Sermo XLV, altered (= Plato) + <i>Sermo XXV</i> , altered (= Menabodus)		
17. Melotus [<i>i.e.</i> Menabodus]	<i>Sermo XXVI</i> (= Zenon)		
18. Gregorius	<i>Sermo XXVII</i> (beg.) + XXXVI (end) ?		
19. Vicarius (Do like nature, help it. When the moon is in conjunction, it does not have any light, but when it is face to face to the sun, it is clear)	Ø	Ø	Ø
20. Bonellus	+ <i>Sermo I</i> (two lines) <i>Sermo XXXIV</i> (= Bacsem)		
21. Briemblius	Sermo XIX (= Dardaris), altered ? Or XXXIV (end), altered ? Or XXXII, end (= Bonellus) ?		

<i>La Turbe des philosophes</i>	<i>Turba A</i>	<i>Turba B</i>	<i>Turba C</i>
22. Arisleus	<i>Allegorie super Librum Turbæ</i> : « Ænigma V. » (« Mercurius de se loquitur »)	Ø	Ø
23. Turba	Sermo XXXV (end) (= Zenon)		
24. Turba / Pythagoras	Sermo LVII (end) (= Turba / Bonellus)	Ø	Ø
25. Balcus (mother in mourning of her son ; the mother is always more merciful to her child than her child to her)	Ø	Ø	Ø
26. Sisticos (wash with fire and cook with water)	???		
27. Bonellus	Sermo XXIII (= Cerus) + Sermo XXXVI (middle of (= Flontos) + Sermo XXI (part of) (= Noficus)		
28. Sisticos	Sermo XXXVI (end) (= Flontos) + Sermo XXXIX (middle of) (= Baesem) ? Or Sermo LIV (end) (=Anaxagoras) ?		

<i>La Turbe des philosophes</i>	<i>Turba A</i>	<i>Turba B</i>	<i>Turba C</i>
29. Ephistus (gentle fire leads to perfection, violent fire to corruption)	Sermo XXVII (end) (= Gregorius) ? or Sermo LI (beg.) (= Horfachol) ?		
30. Morienus	Sermo XIV (beg.) (= Acsubofen), altered	Ø	
31. Basenus	Sermo XXXIX	parts of it wanting	parts of it wanting
32. Velleus	<i>Sermo VI or IX</i> (beg.) (= Lucas / Eximenus) + <i>≈ Sermo VII</i> (end) (= Locustor) ? + <i>Sermo IX</i> (middle) + <i>Sermo IV</i> (middle) (= Pandulfus)	Ø Ø	
33. Azarus (God made the world all round ; and the father of all is his uncle's son, and his uncle is the son of this father, the son is the uncle's brother, [etc.])	Ø	Ø	Ø
34. Vicarius	Sermo LIII (end) (= Eximenus) + <i>Allegoriæ sapientum, Distinctio XIV</i> (<i>De compositi divisione</i> , Manget, I, 475a) ?	Ø	Ø

<i>La Turbe des philosophes</i>	<i>Turba A</i>	<i>Turba B</i>	<i>Turba C</i>
35. Surus	Sermo LX (= Bonellus), altered + Sermo LIX (middle of) (= Theophilus) + ??? (but see sermo LIX, <i>ibid.</i>) + Sermo LXX (= Mundus) + Sermo XX (= Bellus) or LII (middle of) (= Iximidrius) (Whatever we say, we all say one & the same thing. Therefore read each of us & find the <i>consensus</i>)		
36. Basenus / Surus (Do not watch to hours & stars, for matter is always ready to receive its form ; our medicine can be made in every place and time, but this is said only to conceal the science: you will do that, too, when you will know it)	Ø	Ø	Ø
37. Lanus (God created [...] 7 planets, [...] 9 orders of angels, and two principles : matter and form)	- <i>Sermo VIII</i> , altered ? (work made of 3, 4, 2 and 1) - Sermo LVIII (part of) (= Balgus) - <i>Sermo IX</i> (beg.), altered ?	Ø	Ø
38. Acsuboffes	Sermo XXIX (= Diamedis), altered ? + Sermo XXVI (= Cinon), altered ?		
39. Turba	Sermo XXX (end) (= Bacsem) ? + Sermo LXIV (= Pitiagoras)		

<i>La Turbe des philosophes</i>	<i>Turba A</i>	<i>Turba B</i>	<i>Turba C</i>
40. Theophilus and Pythagoras (reason is everywhere : in angels, men, trees, herbs, etc.)	- Sermo XIII (already used in # 7) or Sermo XLIX (beg.) (= Pictagoras) ? - <i>Sermo VII</i> (= Locustor) ?		
41. Theophilus (snakes' venom, if eaten, could kill, but another venom consumes it)	Ø	Ø	Ø
42. Socrates	Sermo LIX (beg.) (= Theophilus)		
43. Senecleus / Socrates	<i>Sermo IV</i> (end) (= Pandulfus), altered ?		
44. Aristoteles / Pythagoras	<i>Sermo VI</i> (Democritos / Arisleus / Lucas)	Ø	Ø
45. Lucas	Sermo XXVI (beg.) (= Zenon) ?		
46. Nostius	Sermo XIV (ca. beg.) (= Acsubofen)	Ø	
47. Arkimius	Sermo LXVII (end) (= Lucas) // <i>Allegorie sapientum Distinctio I</i> ? ("Inquit sapiens Hermes : Si camelorum..." = Manget, I, 467b)		
48. Philosophus	Ø [Bellus = Sermo XX] + ≈ Sermo LII (middle) (= Iximindrius)	≈ Belus (<i>Artis aurif.</i> 1610, I, 10) ?	
49. Danarius	Ø [but see Sermo LXXII (Philosophus), ed. Ruska, p. 169, lines 30-31]	Ø	Ø
50. Esminganus	Ø	Ø	Ø

Going further, the discourse 32, built on as a sort of pasting, contains again some elements issued from the nine cosmological discourses (here italicized in bold). Finally, the discourse 33, that does not correspond to anything I know, is properly unintelligible :

Et le pere de tout est filz a son oncle et son oncle est filz de ce pere, le filz est frere de l'oncle, et le pere est sa sœur ; le filz est pere de l'oncle, et l'oncle est filz du pere, et le pere est filz a son oncle qui est filz de luy. Qui ne l'entend ne le croyt pas.

Both discourses 36 and 37 have an allusion to hylomorphism, a topic that does not appear in the Latin *Turba*.

Discourses 40, 43 and 44 (and perhaps 37, too) contain again some elements borrowed from the nine cosmological discourses. Thus, discourse 44 presents a dialogue, the form—but by no means the content— of which is directly issued from discourse VI of the Latin *Turba*. Yet, the names of the speakers have been entirely changed and the new dialogue looks quite amusing : Aristotle suddenly speaks, but Pythagoras roughly rebukes him for his boldness as he still were a boy, Aristoteles appearing indeed not as a philosopher, but as Plato's mere pupil :

Aristoteles :

Saichez que plusieurs parlent en diverses manieres ; mais la verité n'est que une chose, laquelle est au fumier, et d'elle mesmes se congnoyt.

Pythagoras :

Comment es tu si hardy de parler, Aristote ? Tu n'es pas encores venu si avant de parler avecques nous. Tu deüsses escouter.³⁶ Neantmoins ce que tu as dit est vray. Mais tais toy, escoute les maistres et Platon.

In discourse VI of the Latin *Turba*, we find a similar dialogue between Democritus and Arisleus. Democritus is presented as Lucas' pupil. (In the latter, we easily recognize Leucippos, the actual master of Democritus.) In the *Turba*, Arisleus rebukes Democritus for having dared to speak with his master's peers. Lucas stands up for Democritus, putting forth his uncommon science, but the assembly decides that he is still too young to speak there :

Version A, *Sermo* VI (Lucas)
(ed. Ruska, p. 113)

Inquit Democrites, qui Lucae est discipulus : Bene dixisti, Magister, cum de quatuor naturis tractavisti !

Ait Arisleus : Quoniam, Democrites, a Luca scientiam habuisti, non deberes praesumere cum Magistri tui paribus loqui.

<i>La Turbe des philosophes</i>	<i>Turba A</i>	<i>Turba B</i>	<i>Turba C</i>
51. Nostius	Sermo XXIX (part of) (= Diamedis) + Sermo LII (part of) (= Iximindrius) + Sermo XV (middle of) (= Frictes)		
52. Isimindrius	Sermo L (part of) (= Pandolfus) Ø	Ø	Ø
53. Esminganus	<i>Sermo LXIX</i> (beg.) (= Fiorus)		
54. Turba	Ø	Ø	Ø
55. Archimius	<i>Sermo LXVIII</i> (= Artanius [Archimius N])		
56. Ismindrius	<i>Sermo LXX</i> (= Mundus)		
57. Pythagoras	Sermo XLIX (end) (= Belle/Pictagoras) ? + <i>Sermo LXXII</i> (parts of) (= Philosophus) ? + <i>Sermo LXV</i> (beg.) (= Horfolchus) + <i>Sermo LXVIII</i> (part of) (= Artanius)		
58. Turba / Pythagoras / Turba	Ø	Ø	Ø
59. Florus	Sermo XLIV, altered (= Moyses) (but <i>aqua sulfuris</i> / <i>sulfurea</i> appears in <i>sermones LXIX</i> (end) to <i>LXXI</i> as well)		
60. Brachus	<i>Sermo LVIII</i> (end) (= Balgus)		
61. Zeno (Zeno adds upon Brachus)	Ø	Ø	Ø

Respondit Lucas : Quamvis naturarum scientiam a me Democrites habuisset, habuit tamen ab Indorum philosophis et Babiloniensibus. Puto ceterum, contemporaneos suos hac ipsum scientia superare.

Respondit Turba : Perveniens hic in illam ætatem non parum placebit ; nunc autem in juvenili constitutus ætate fari non debet.

Thus the pair Lucas-Democritus has become in French Plato-Aristotle, and Arisleus (of which the name « Aristotle » might have been derived as a mere misreading) has become Pythagoras.

Discourses 53 to 60 (which are close to the end of the French version) take up some elements actually issued from the last discourses of the Latin *Turba* (ca. discourses LVIII-LXXII ; the relevant numbers are printed in bold in the second column).

The question of the *Visio Arislei*

Then we arrive at the end of the French *Turba*, an end that needs to be closely examined. We find there—*before* the partial translation of discourse LXXII, the last one of version A—a dialogue of a certain length forming the text called, in the Latin versions, *Visio Arislei*, presenting the alchemical marriage of Gabritius and Beya. I already mentioned that this *Visio* did not belong—according to Ruska—to the *Turba* properly said. Now both Plessner and Sven Limbeck have showed the exact contrary. Ruska relied too much indeed on the printed versions ; he failed to pay attention to the manuscripts as much as he should have. He gave a *Turba* edition that forms an interesting starting point to further study, but Plessner has perfectly showed that his edition must be entirely remade. As to the *Visio Arislei*, the 13th-century manuscript used by Ruska for his edition already contained it *inside* of the *Turba*, just before the last discourse, exactly as we see in the French version.³⁷ Ruska believed, yet, the *Visio* to be a mere interpolation in the manuscript. To be sure, its title was : « The Distinction of the epistle of Brother Arisleus, or his vision, that he penned as an example for the work of this art [...]. »³⁸ Such a title easily led Ruska to think that this text had been misplaced, since it was separated from the rest of the *Turba* in the printed versions.

<i>La Turbe des philosophes</i>	<i>Turba A</i>	<i>Turba B</i>	<i>Turba C</i>
62. Lucas	- Sermo XLV (end) (= Plato), altered ? - Ø	Ø	Ø
63. Ismindrius / Turba - 1° Cook water with water, gum with gum, etc. - 2° - 3° Our science is nothing but changing hard into soft, warm into cold, etc. - 4° "Environnez l'environné du dedans au dehors, contenant le contenu..." (on the possible meaning of this, see Ruska, p. 174, n. 4)	- Ø - Sermo XXXIX (<i>ca. finem</i>) (= Bacsem) - Ø - Ø	Ø Ø Ø	Ø Ø Ø
64. Pythagoras (adds upon Ismindrius)	Ø	Ø	Ø
65. La distinction de l'épître de Arisleus...	<i>Visto Arislei</i>		
66. Pythagoras 67. Arisleus			
68. Pythagoras (<i>ars = donum Dei</i> ; consists in killing the living one and bringing the dead to life)	- Sermo LXXII (beg.) (= Philosophus) - Ø	Ø	Ø
69 (last). Turba	Sermo LXXII (end of the first half)		

But Ruska did not consider that the version A itself could have circulated in the Middle Ages in different versions. However it be, the *Visio Arislei* is found inside of the *Turba* not only in the Berlin manuscript edited by Ruska, but in a number of other manuscripts as well.³⁹ In addition, the manuscripts of the French version also seem to include the *Visio Arislei* at the same place as the Berlin, St. Gall, Paris, and Bologna manuscripts (that is, between discourses LXXI and LXXII).⁴⁰ Only the French printed version places it at the very end of the text. But even so, the *Visio Arislei* still remains part of the *Turba*. Moreover, in the Latin text, the prologue of the *Visio Arislei* is obviously linked to one of the discourses of the *Turba* : the *sermo* LVIII (Balgus) of version A.⁴¹ Now in the French version, the relevant passage of this very discourse has been placed much closer to the *Visio Arislei* (it forms discourse 60, while the *Visio* is discourse 65), obviously to consolidate the coherence of the whole treatise. Thus Ruska's decision to exclude the *Visio* from his edition and from the « authentic » text of the *Turba* definitely appears unjustified.

The *Epistola Rasis*

The *Visio Arislei* has been transmitted not only in *Turba* manuscripts : it has also been separately circulated.⁴² It is not the only text, among those translated in the French *Turba*, that had a separate manuscript tradition : to this category belongs also a brief text attributed, in the French *Turba*, to Plato. The discourse of Plato (discourse 12) is the first, in the French *Turba*, to break with the continuity of the Latin version : discourses 2 to 11 of the French text successively correspond (with often great textual variants) to *sermones* IX to XVII of version A. But then, the discourse 12 (Plato) is almost entirely different from *sermo* XVIII (Mundus), except that *sermo* XVIII dealt, among other things, with two matters : gum and milk ;⁴³ now the discourse of Plato in the French *Turba* begins by evoking the same matters : gum and milk, though in another way.⁴⁴ This is its only common feature with *sermo* XVIII.

There is a Latin source to this discourse of Plato : it is a brief allegorical text most often entitled *Epistola Rasis*. Petrus Bonus (ca 1330) already quotes it under this title. It has been transmitted in various manuscripts since at least the 14th century, before becoming one of the very first printed alchemical texts.⁴⁵

A parallel drawn between that text and its French version leaves the reader perplexed : there are such differences from Latin to French that one does not know how to explain them. In the example given here, I italicize the Latin words obviously passed in the French text :

Paris, BnF, MS. lat. 7147, fol. 58v°-59r° (ed. Duval, pp. 33-35) :

Nostre gomme coagule nostre lait, et nostre lait dissout nostre gomme ; et croissent dedens la pierre de paradis qui est le boys de vie : en laquelle y ha deux contraires ensemble, c'est assavoir feu et eaue. Cestuy cy vivifie cestuy la. Et cestuy tue cestuy la. Et cestuy et cestuy conjointz sont tousjours. Il appert rogeur orientale et rogeur de sang. Et nostre homme est vieulx, et nostre dragon jeune : lequel mangeuë sa teste avec sa queue, et la teste et la queue est ame et esperit, et l'ame et l'esperit sont creës de lut. Et l'ung est de Orient, c'est assavoir l'enfant, et le vieulx de Occident. Les corbins vollent par l'air, et au temps d'aoust muent leurs plumes en creux de chaisne [...]

*Epistola Rasis*⁴⁶

[...] Veritatem dixi tibi per eum qui omnibus fecit oriri auroram. *Lapis paradisi, lumen vite, in quo sunt duo opposita simul, scilicet ignis et aqua. Illud vivificat istud, et illud perimit istud, et hoc et hoc in leone conjuncta simul, per eum qui est mors et vita veritatem dixi tibi et non mentior. Gummi nostrum coagulat lac nostrum et lac nostrum dissolvit gummi nostrum. Et post apparebit rubedo orientalis et rubedo sanguinis. Hic lapis mundus sine fetore invenitur in locis altissimis et cum hoc magnificaverunt se philosophi super omnes alios et vaticinati sunt futura. Veritatem dixi per potestatem celorum cui non sum mentitus scienter. Homo noster antiquus est draco noster. Iste comedit caput suum cum cauda, et caput et cauda sua est anima et spiritus. Et anima et spiritus sunt creati de luto, et hoc et hoc ex Oriente et ex Occidente. Per expellentem omnia non mentior, quia dixi ut vidi palam in civitate [sic for veritate ?]. Dealba corvum tuum si vis dealbare ipsum.*

The Latin text has not been exactly translated, but rather freely used as a rough material by its French translator—unless it had just got dramatically corrupted, as it seems to be the case for many parts of the text.⁴⁷ The words « le boys de vie », for instance, can only stem from a misreading of the Latin *lumen vite*, misunderstood as *lignis vite*.

Another point of interest of the *Epistola Rasis* is its possible Arabo-Spanish origin, suggested by some words like these (my italics) :

- Veritatem dixi *per familiam Machometti*.
- Episcopus noster ut color venarum vel violarum & anima citrina ut citrinitas, & *narges vel ypoquistidos*.⁴⁸

Since this text has been used for the French version of the *Turba*, the question arises whether it could have been found in some Latin version of the *Turba*. I do not know of any such example,⁴⁹ but our knowledge of the

manuscript tradition of the *Turba* is so weak that nothing yet may be either stated or denied before further research.

Some results on the French *Turba*

Let us now summarize some points of interest in our study of the French *Turba*.

1° The discourses directly borrowed from the Latin *Turba* (considered in the form that we presently know) form scarcely more than the half of the French text.

2° A third of the French text is alien to any known Latin version of the *Turba*.

3° Around 10% of the French text may be considered of an uncertain origin, whether derived from the Latin *Turba*, or alien to it.

4° As to Christian passages and references to hylomorphism, there are obviously alien to the Latin *Turba*. But it is difficult to say whether they have been inserted in the text when it has been translated into French, or if they were already found in the Latin model that has been used for the translation.

As to this Latin model, we already know that the discourses directly borrowed from the Latin *Turba* come from version A. Yet we should not think that this version A may have been a rather vague model. On the contrary, there is clear evidence that the model of the French version has been a specific manuscript: we can affirm that this manuscript was, in some cases, close to the manuscripts called (G) or (E) by Ruska, that is St. Gall, Vadiana Samml., MS. 300 (14th c.) and Erfurt, Univ.- und Forschungsbibl. Erfurt/Gotha, Bibl. Amploniana, MS. Quart. 381 (early 14th c.).⁵⁰ But in more cases, it was close to the manuscript called (N) by Ruska, that is St. Gall, Vadiana Samml., MS. 389 *with its glosses*. By no means may this manuscript have been the direct model of the French version: many variants from it do not fit with the latter; moreover, it dates from the XVIth century. But it obviously derives of an older manuscript that might have been closer to the model of the French version. Here is a typical example: the discourse 55 of the French version, attributed to Archimus. Its text is obviously corrupted. The *sermo* LXVIII, attributed to Artanuis, does not correspond very well with it. One difference is easily explained by a mere confusion between *congelatur* and *conjungitur*. But if we read the variants given by Ruska, we see that in manuscript (N) the name of the speaker has become Archimus, as in French, and the word *alçut* has almost become *alzem*, and the reading of the gloss allows us to understand where these strange « vers » (worms)

come from, even if the French text remains slightly corrupted (I italicize the French words obviously derived from the Latin text) :

La Turbe des philosophes, discourse 55 (*Archimus*)
(ed. Duval, p. 55)

Prenez alzem, ce sont vers noirs et venin de vieilles tieulles [i.e. tuiles] rouges marines et ont horrible regard, et les cuysez ne trop chauld ne trop froid. Car s'il est froid, nul ne se altere point, et s'il est chauld il ne se fait pas conjonction par vraye amour et de eulx mesmes. [...]

Version A, *sermo* LXVIII (Artaninus)
(ed. Ruska, p. 167)

Ait Artaninus : Scitote, omnes hujus artis investigatores, quod opus nostrum, cujus inquisitionem passi estis, ex maris fit generatione, quo post Deum et in quo opus perficitur. *Accipe igitur alçut [i.e. snails] et veteres lapides marinos [i.e. probably shellfishes],*⁵¹ *et carbonibus assate, quousque albi fiant. [...]* Et scitote, quod opus aliud citius congelatur, aliud vero tardius. Hoc autem accidit ex coquendi diversitate ; *si enim locus, ubi coquitur, humidus et roridus fuerit, citius congelatur, si vero siccus, tardius congelatur.*

Variant readings :

Artaninus B Attamus M *Archimus* N
alçut B *halsut* M *akem* (from *alcem*) N (glossa in N : *sunt vermes duos habentes cortices — in herbis generantur .sc. limaces*)

The French text could not have read thus without the gloss preserved by (N) ; this is but one of several examples of the similarities that exist between the French version and this manuscript. The point is that we see very well in this case how much the French version is derived from a precise stage of the text of the *Turba*, a stage that we presently do not know.

If we now consider the passages of the French version that are not found in any Latin version of the *Turba*, we are faced with various fragments the origin of which is still to be precised,⁵² and with diverse texts of a possible, or certain, Arabic origin : discourse 12 (Plato), corresponding to the *Epistola Rasis* ; the *Visio Arislei*, translated from an Arabic text that has been preserved ;⁵³ and perhaps discourse 47, a part of which is possibly derived from the « Prima distinctio » of the *Allegoriae sapientum supra librum Turbae* (inc. « Inquit sapiens Hermes, Si camelorum... » (ed. Manget, I, p. 467b). These latter should lead us to wonder how much we know of the varied forms taken up by the *Turba* in the Middle Ages.

Some reflexions on the Latin *Turba*

I shall start with the three Cambridge manuscripts forming the long version of the *Turba* studied by Plessner.⁵⁴ To make the reader understand their relationship to version A, I shall first compare their last discourses with the last ones of the Berlin manuscript.

Plessner described the three Cambridge manuscripts as identical regarding the end of the *Turba*, each of them being at the same time independent of each other.⁵⁵ This is only partly true : the discourses are the same, but the names of the speakers differ, at least in Trinity College, MS. O.2.18 and St. John's College, MS. G.14.⁵⁶

Plessner wrote that he had always been unsatisfied with the text of Ruska's edition, which « ends abruptly, and at the same point as the printed editions, without a proper conclusion, obviously leaving *sermo* 72 unfinished ». He showed yet at the same time that the point to which Ruska's text ends, far from being the result of an arbitrary shortening by the 16th-century editor, was the same as in other manuscripts of the *Turba* such as Oxford, Corpus Christi College, MS. 125. The examination of the three Cambridge manuscripts was for him highly surprising, since he found there « the continuation of *sermo* 72 which [he] had believe incomplete », followed by « a number of additional *Turba*-speeches ». Yet Plessner carefully added : « Whether all of them are part of the original *Turba*, is more than doubtful. »⁵⁷ Bearing this in mind, let us see now how these additional discourses are arranged in those manuscripts, and what they exactly may be.

We can see, first, that the *Visio Arislei* is not placed before the *sermo* LXXII, as in the Berlin manuscript and a number of others : thus discourses 70 to 72 in the Cambridge manuscripts are very similar to the end of version A. But, as indicated by Plessner, their discourse 72 is longer than in version A, and it is followed by a discourse of Pictagoras (inc. « *Ars astronomie et philosophie legentibus...* »), the character of which « does not differ at all from that of the alchemical *Turba*-speeches ». ⁵⁸ Now this discourse is also to be found as an isolated text entitled : *Conclusio quam fecit Pictagoras in libro Turbæ philosophorum*.⁵⁹ Thus this discourse, numbered 73 in the manuscript of St. John's College, seems to be nothing other than the conclusion that Plessner felt wanting in version A and in Ruska's edition.

**End of the *Turba* in the Berlin MS. used by Ruska
and in two Cambridge MSS. :**

Berlin Qu. 584 (13 th c.)	Trinity College 1122 (O.2.18) (14 th /15 th c.)	St. John's Coll. 182 (G.14) (AD 1479)
[Sermo LXX] (Mundus)	Mundus	70. Mundus
[Sermo LXXI] (Bracus)	Boratus	71. Boratus
<i>Visio Arislei</i>	Ø	Ø
[Sermo LXXII] (Philosophus)	Socrates [= Philosophus], longer than <i>B</i>	72. Philosophus, longer than <i>B</i>
Ø	Pictagoras (= <i>Conclusio quam fecit Pictagoras in libro Turbæ philoso- phorum</i> in a Venice MS. = TK 142)	73. Pictagoras
Ø	<i>Visio Arislei</i>	74. <i>Visio Arislei</i>
Ø	Belinus [= <i>Dicta Belini</i> , in <i>Allego- riæ sapientum</i> , # 28]	75. Leucippus [= <i>Dicta Belini</i>]
Ø	Bonellus [= <i>Allegoria Merlini</i>]	76. Democritus [= <i>Alleg. Merlini</i>]
Ø	??? (the same text as St. John's, but under which name ?)	77. Albemazar / Abebecar
Ø	??? (the same text as St. John's, but under which name ?)	78. Marcus Rex Grecorum
Ø	??? (the same text as St. John's, but under which name ?)	79. <i>Pietas Arthuri</i> (King Arthur)

Should we understand, then, that this is the very end of the *Turba* in the Cambridge manuscripts, so that the subsequent discourses should be intended as a mere supplementary material? By no means. As Plessner summarized, Pictagoras, at the end of his discourse, « asks Arisleus to explain his doctrines to the assembly in an easily understandable manner ».⁶⁰ And here comes the *Visio Arislei*. Then we find a discourse attributed to Leucippos in the manuscript of St. John's College, and to Belinus in the manuscript of Trinity College. Here is the transition between the two discourses :

Pictagoras ait : « Vidisti Arislee, nam in hoc dicto tuo continetur exemplum totius artis sub enigmatē. Dic et tu Beline aliquid huic simile. » Qui consurgens ait : « Cum essemus super quoddam fluvium, quidam homo ascendens dixit : "Scitote quod pater meus Sol..." »⁶¹

In other words, the *Visio Arislei* is only the first of a series of narrative discourses intended to explain the whole science under the veil of allegory. The discourse here attributed to Belinus is easily recognizable from its incipit : it is the text entitled *Dicta Belini*, known as the *Distinctio* 28 of the *Allegoria sapientum supra librum Turbæ*.⁶² The next discourse, attributed to Democrites in the St. John's College manuscript, and to Bonellus in the Trinity College one, is no other than the small allegorical text, possibly of an Arabic origin, known since 1525 as *Allegoria Merlini*, but printed for the first time 40 years earlier in the *Liber Geber* after having been widely circulated in the Middle Ages.⁶³

The three subsequent discourses « drop the narrative style ». Plessner was of the opinion that « they were obviously copied by the Latin author from undoubtedly genuine *Turba*-speeches », but he did not add any textual argument.⁶⁴ Plessner also tried to draw some conclusions from the names of the last speakers : he noticed that the series of classical names constantly found in the *Turba* ends here with Democrites (*i.e.* the *Allegoria Merlini*). Then comes a discourse involving two Arabic names : Albemezar and Abebecar. Then comes « Marcus Rex Grecorum », and finally, King Arthur.⁶⁵ But Plessner's speculations on these series of names are weakened by the fact that the names differ from one Cambridge manuscript to another : Plessner's speculations can only apply to St. John's College manuscript. In any case, they did not result in any significant conclusion. It should be noted in passing that the discourse attributed to King Arthur is also found separately in a possibly 13th-century manuscript in Florence, without any link with the *Turba*.⁶⁶

We shall not learn more on this long version of the *Turba* until its last discourses are published. But, to return to the text of the *Allegoria Merlini*,

which was sometimes circulated under the name of « Maumet philosophus », *i.e.* Rasi (Abû Bakr Muhammad b. Zakariyâ' ar-Râzî, 865-925, sometimes called in Latin « Mafomet de Razi »), it is difficult not to establish a link between it and the *Epistola Rasis*, that was published for the first time just before it in the same 15th-century collection, both anonymously.⁶⁷

Conclusions

We may retain from this whole examination that several texts apparently translated from the Arabic were revolving like in orbit, so to say, on the periphery of the Latin *Turba*. They could be either integrated (like here) to the text of the *Turba*, or circulating independently in manuscripts. This is the reason why it seems very likely that the French version of the *Turba*, however strange it looks like, corresponds to a specific version of the Latin text, of which there must be manuscript witnesses extant. This hinders by no means that this Latin model has certainly been subjected to much alterations and reshaping in the course of its translation into French. Another interesting aspect is the names of the speakers. We have seen first that in the French version, many names were entirely alien to the Latin versions. But, as we see now, this occurs, too, with the three Cambridge manuscripts (or at least with the two I might compare one with another), although the corresponding discourses are identical. We may infer from this mainly two things, on which I shall conclude this paper.

The first point is the problem of medieval alchemical texts written in vernacular (at least in French). However disconcerting these texts may be, and corrupted as well, they rest nevertheless on Latin sources more often than we might be inclined to think, and these Latin sources, often little known texts, have been actually circulated in medieval alchemical literature. I do not think here only to the example of the *Epistola Rasis* as the source of one of the discourses of the French *Turba* : the same situation occurs, for instance, with the *Book* by Bernard le Trévisan, the first part of which is devoted to the *primi inventores* of alchemy (the very first being Hermes Trismegistus). This first part of the book actually is nothing else than a mere translation of a 14th-century Latin text, entitled *Qui fuerunt primi inventores hujus artis*.⁶⁸

The second point of this conclusion is the degree at which the *Turba* has proven to be little known to us. Despite the weight and influence of the printed versions, it becomes more and more questionable whether we really know what were the textual limits of the Latin *Turba* in the Middle Ages. We shall never be in a position to acquire a real knowledge of its

medieval Latin text(s) until we have studied, or at least carefully described in much detail, a significant number of its manuscripts. In the meantime, we are doomed to retain only the fixed, partial, and often deceitful image of the medieval *Turba* as reflected by its various printed versions.

Appendices

1. List of the manuscripts of the French *Turba*

- Paris, BnF, MS. lat. 7147, fol. 56v°-68v° (AD 1537)
Described in Corbett, *Catalogue*, vol. I (see n. 39 above), pp. 61-62. Copied by Oronce Finé (see n. 29 above). In this version, each discourse is only preceded by the name of the speaker, without any introductory verb. Quite faithfully edited, but ineptly commented by Paulette Duval, « *La Turba philosophorum Gallica* » (see n. 22 and 31 above).
- Bologna, B.U., MS. 457, b. IV, fasc. 4, fol. 34v°-53r° (ca. 1543-1548)
Mentioned by D. Kahn, « Le fonds Caprara » (see n. 12 above), p. 89, n. 120. A complete, yet abridged version, copied by Grégoire de René, « canon of Chalon » in 1543, on which see Kahn, *ibid.*, p. 92 and n. 133. The previous text in the manuscript is dated 1543, but a note fol. 53v° bears the date of 1548.
- Bologna, B.U., MS. 457, b. XX, fasc. 4 (AD 1547), fol. 59r°-102r°
Mentioned and cursorily described by Kahn, « Le fonds Caprara », p. 89, n. 120, and p. 92, n. 133. Almost the same copy as MS. 457, b. IV, fasc. 4, copied by the same scribe, with some variants. Fol. 102r° reads thus : « Fin de la Turbe des philosophes. Copié par moy Gregoyre de René. Achevé la veille de nativité S. Jehan Baptiste 1547. »
- Bologna, B.U., MS. 457, b. XXX, fasc. 1 (AD 1550), fol. 1r°-58v°
Mentioned by Kahn, « Le fonds Caprara », p. 89, n. 120, and p. 109. We read this *in fine* : « Copiez a Effrainz par moy [*illegible signature*] 1550. » A humanistic hand has written under the title, fol. 1r° : « La Cressoniere mei usum habet. » The same hand has written, fol. 54v° in the margin : « Tout le secret gist en ce philosophe Arisleus, c'est celuy que mon bon maistre et grand veneur, nommez le moine blanc alias Tournebulle m'exposa dedans Tendeure [*reading uncertain*] en l'an 1558. »
A slightly different, very developed version, comprising at least 81 numbered discourses, including speakers who do not appear anywhere else. Thus the discourse bearing the number 3 is attributed to « Athleta qui fut frere de la femme Pictagoras », *i.e.* Milo of Croton. The first discourse attributed to Arisleus, which corresponds to the prologue before *sermo* I in the Latin *Turba* (here p. 14 : « Dict Arisleus. Sachez que nostre maistre des prophetes et test des philosophes [est] souverain des entendementz et qu'il a eu tant de don de Dieu et de sagesse... ») only comes in the ninth position, after Pictagoras, Ysmydrius, the above mentioned Athleta, « Digendera qui fut souverain

sage », Agadimenon, « Pegasius le quel estoit gendre de Pictagoras », Pictagoras again, and Exminganus. After Arisleus there is a two pages lacuna (one sheet is missing), then we find Parmenides, Pictagoras, le Viscaire, Albubuf-
 erus (corresponding to the discourse 38 of the standard French *Turba* ?), « Ex-
 pheseus parantz de Ysmidrius », Andagasar, Balgus and Azarus (correspond-
 ing to *sermo* LVIII), Exiseus, Azimon, Anaxagoras, Platon, Theophilus, the
 Turbe, Nostius, Pictagoras and Belle (corresponding to *sermo* XLIX), Baco-
 sius, etc. Here is the end of the text : Esmigarius (here numbered 72), Lucas,
 Alfaltius, Pictagoras, the Turbe, Bracus, Arisleus, Pictagoras / Arisleus, the
 Turbe.

- Bologna, B.U., MS. 457, b. XXVI, fasc. 3, fol. 1r°-38r° (AD 1555)
 Mentioned by Kahn, « Le fonds Caprara », p. 89, n. 120, and p. 108.
- London, Wellcome Library, MS. 719, fol. 122r°-149r° (AD 1580)
 Described by S. A. J. Moorat, *Catalogue of Western Manuscripts on Medicine and Science in the Wellcome Historical Medical Library*, vol. I, London : The Wellcome Institute of the History of Medicine, 1962, p. 529.
- Paris, BnF, MS. fr. 2011 (16th c.), fol. 4r°-30v°
 Described by Corbett, *Catalogue*, vol. I (see n. 39 above), p. 229 ; mentioned by Limbeck, « Die *Visio Arislei* » (see n. 16 above), p. 171, n. 15.
- Bologna, B.U., MS. 1445 (16th c.), fol. 77r°-[103v° sqq.]
 Mentioned and very cursorily described by Kahn, « Le fonds Caprara », p. 68, n. 24 ; p. 90 and n. 125 ; p. 93, n. 138, and p. 102. As I had only part of the manuscript on a microfilm, I could not see the exact place where this copy ends, a few pages after fol. 103v°. We read fol. 77r° this interesting remark : « Collationné à l'imprimée, est toute semblable, ce febvrier 1640. »
- Paris, Bibl. Sainte-Geneviève, MS. 2245 (ca. 1605), fol. 96r°-121v°
 See n. 40 above. Described by Charles Kohler, *Catalogue des manuscrits de la Bibliothèque Sainte-Geneviève*, vol. II, Paris: Plon, 1896, p. 287.
- Paris, Bibl. Sainte-Geneviève, MS. 2205 (early 17th c.), fol. 1r°-31v°
 See above, n. 40. Described by Kohler, *Catalogue...*, vol. II, pp. 299-300.
- Bologna, B.U., MS. 457, b. XVII, fasc. 3 (early 17th c.), pp. [1]-[51]
 Mentioned by Kahn, « Le fonds Caprara », p. 89, n. 120, and p. 108. We read p. 1, on the left top : « Ceste Turbe est une traduction ancienne de la Turbe latine du N° 97 qui est abregee de l'entiere. » This n° 97 is MS. 457, b. XII, fasc. 2 (17th c.) of the same library, that actually contains (pp. 1-44) a Latin version of the *Turba* entitled *Expositiones Turbae philosophorum super secretum alkimie*. We read there, p. 1, up : « Coppie du n° 126. Au n° 84 j'ay une vieille traduction françoise de cest exemplaire latin qui est un abregé de la Turbe entiere. » These cross-references are quite usual in the fonds Caprara ; see Kahn, « Le fonds Caprara », pp. 76-78.

- Bologna, B.U., MS. 457, b. XXI, fasc. 6 (early 17th c.), pp. 1-56
Mentioned by Kahn, « Le fonds Caprara », p. 89, n. 120, and p. 107. We read on p. 1, up : « Imprimee. » This version seems actually very close of the printed version. Could it be its model itself ?
- Bologna, B.U., MS. 457, b. VII, fasc. 5 (AD 1640), pp. 1-216
A copy of MS. 457, b. XXX, fasc. 1. Mentioned by Kahn, « Le fonds Caprara », p. 89, n. 120, and p. 105.
- London, British Library, MS. Sloane 2681 (17th c.), fol. 86r°-94v°
Described on the website of Adam McLean (www.alchemywebsite.com/mss/MSS251.HTM, accessed 5 October 2010). Mentioned by Limbeck, « Die *Visio Arislei* », p. 171, n. 15.
- † Paris, BnF, MS. lat. 18426 (17th c.), fol. 115 sqq. †
Mentioned and quoted by Ruska, *Turba Philosophorum*, pp. 96-97. Unfortunately, this manuscript has disappeared since October 1984.
- London, British Library, MS. Sloane 3461 (end of the 17th c. ?), fol. 1r°-26v°
Described on the website of Adam McLean (www.alchemywebsite.com/mss/MSS284.HTM, accessed 5 October 2010). Mentioned by Limbeck, « Die *Visio Arislei* », p. 171, n. 15. This manuscript contains *Le Texte d'Alchymie et le Songe verd* by François Alary (fol. 54v°-79r°), a book anonymously published in 1695,⁶⁹ which might provide us with a *terminus a quo*, unless this text is written in a later hand. However it is, the title of the French *Turba* found here (*La Turbe, ou l'assemblée des philosophes, apellée le Code ou Regle de verité dans l'art*) does not seem to evoke a mere copy of the printed version.
- Paris, Bibl. Interuniversitaire de Pharmacie, MS. 81 (17th c. ?)
Non vidi.
- Grenoble, Bibl. Municipale, MS. 824 (18th c.), vol. III, pp. 199-228 (?)
Non vidi. Possibly a copy of the 1741 edition (see n. 9 above).
- Caen, Bibl. Municipale, MS. 153 (438-In-4° 62) (18th c.)
The title (« La turbe des philosophes, qui est appellé le codde de vérité en l'art, auquel livre Pithagoras a assemblé les parolles de ses disciples... ») is the same as the 1618 edition. As the text is followed by *Le livre des douze portes d'alchymie*, an anonymous work only found in the same edition, this manuscript is very likely to be a mere copy of the 1618 edition.

2. The discourse of Plato and the *Epistola Rasis*

Paris, BnF, MS. lat. 7147, fol. 58v°-59r° :

Plato

Nostre gomme coagule nostre laict, et nostre laict dissout nostre gomme ; et croissent dedens la pierre de paradis qui est le boys de vie : en laquelle y ha deux contraires ensemble, c'est assavoir feu et eue. Cestuy cy vivifie cestuy la.⁷⁰ Et cestuy tue cestuy la. Et cestuy et cestuy conjointz sont tousjours. Il appert rogeur orientale et rogeur de sang. Et nostre homme est vieulx, et nostre dragon jeune : le quel mangeuë sa teste avec sa queue, et la teste et la queue est ame et esperit, et l'ame et l'esperit sont creés de lut. Et l'ung est de Orient, c'est assavoir l'enfant, et le vieulx de Occident. Les corbins vollent par l'air, et au temps d'aoust muent leurs plumes en creux de chaisne, et a plume jeune, laquelle lui chet en mangeant serpents, et la teste lui vient rouge comme pavot. C'est la fontaine du torrent. Elle court par deux veines, et leur commencement est d'ung canal. L'une est salee, l'autre est douce. Le corbin se purge, et elle le nettoye. Et il dira, celluy qui m'a nettoyé me fera rouge, aultrement je le tueray et m'en volleray. Qui a veu cecy en peust parler : et qui ne l'a veu ne le peust croire.

Esveille la beste saulvaige. Metz luy des oyseaulx domestiques auprés, qui la prennent et la gardent de voller. Et quant elle est prinse si donne aux oyseaulx pour leur peine le foye, et boyre le sang pour les ennyvrer emprès. Et au cheval que tu chevauches, fais luy une couverture blanche. Et le cheval c'est ung fort lyon couvert d'un poille, et dessus l'ung et l'autre est nostre griffon. Ceste chose a trois angles en sa substance, et en ha quatre en sa vertu, et en ha deux en sa matiere, et ung en sa racine. J'ay passé par maintes voyes, et tousjours mon chien emprès moy. Il vient ung loup d'Orient, et mon chien et moy d'Occident. Cestuy mordit celluy, et celluy mordit cestuy. Et tous deux sont faictz enraigez, et se entretiennent [*recte* : entretiennent] l'ung l'autre jusques à ce que d'eux se fassent ung grand venin, et puis thyriacle.

Ceste est la pierre cachee tant aux hommes et aux femmes que aux dyables. Je t'ay exposé ce que chascun avoyt celé et le t'ay dit.

Liber Geber, p. [202]-[206] :⁷¹

Exemplum scientiæ nostræ senex supra montem, in eo sunt nature conjuncte cum complemento : terra, aqua, ignis⁷² et aer, et omnia hec in Saturno. Cum eo aperiuntur porte scientiarum, sicut dicit Hermes et precedentes sui primi. Accipe lapidem suspensum supra mare ut cera alba super fontem vel ypoquistidos.⁷³ Nomen ejus victor. Cum eo perime viva et vivifica

perempta. et ei sunt mors et vita, et istud et illud ex Oriente et Occidente. Cum hoc habebis scientiam in qua pigritaverunt Arabes. Veritatem dixi tibi per eum qui omnibus fecit oriri auroram. Lapis paradisi, lumen vitæ. In eo sunt duo opposita simul, scilicet ignis et aqua. Illud vivificat istud,⁷⁴ et illud perimit istud, et hoc et hoc in leone conjuncta simul, per eum qui est mors et vita veritatem dixi, non mentior. Gumen nostrum coagulat lac nostrum, et lac nostrum dissolvit gumen nostrum. Et post apparebit rubedo orientalis et rubedo sanguinis. Hic lapis mundus sine fetore invenitur in locis altissimis, cum quo magnificaverunt se philosophi super omnes alios, et vaticinati sunt futura. Veritatem dixi per potestatem celorum, cui non sum mentitus scienter. Homo noster antiquus est. Est draco noster. Iste commedit caput suum cum cauda sua, et caput et cauda est anima et spiritus, et anima et spiritus sunt creati de luto, et hoc et hoc ex Oriente et Occidente, per expellentem nocumenta non mentior, quia quod dixi, vidi in civitate [*recte* : veritate ?]. Dealba corvum tuum si vis dealbare ipsum. Cum Nilo Egypti albescit primo, tunc cum Persia in secretis,⁷⁵ et cum hoc et hoc apparebit rubedo ut papaver in heremo. Per vivificantem Deum omnia, non mentior. Aqua nostra abluit sordes de terra, et sol noster est adjutor ejus et [*operat*] paulatim cum istis.⁷⁶ Mundabis omnem nigredinem et obscuritatem ejus. Tunc subridebit dicens, quis mundavit me ? qui vidit illud subridebit locutus, et veritatem dixi, non mentior. Terra in oculis sunt tres, Oriens et Occidens, et super eos Saturnus albus ortus est, et anima horum trium est ignis. Veritatem dixi per familiam Machometti. Manifestabo quod occultaverunt primi non cum invidia. Terra nostra vertit es tuum in argentum primo, et ultimo in aurum inveteratur, et habebis scientiam in qua pigritaverunt Arabes. Denigras cum Egypto nostro, et non cum Persia, et cum Persia siccas, quia est domus siccitatis, et cum Egypto humectas quia est domus humiditatis, et hoc et hoc albedo et rubedo sine mensuratione, ut rubedo in moris, vel ut sanguis dominarum. Lapis scientie nostre senex primo, et ultimo puer, quia albedo ejus in initio et rubedo in ultimo cum dominio. Hic est lapis cum quo titubaverunt omnes qui obierunt et mortui sunt plurimi eorum cum dolore et tristitia, quoniam declinaverunt ad viam demonum et reliquerunt viam prudentie. Copertorium equi pallium nostrum album, et equus noster leo fortis, sub pallio coopertus, et super illud et illud griffus noster naturam geminatam⁷⁷ retinens. Hic lapis triangulus est in esse, quatriangulus in qualitate. Veritatem dixi per operatorem [*recte* : *Creatorem* ?] dealbans et rubefaciens omnia. Non sunt singularia in occulto sed sunt mixta Oriens et Occidens simul juncta ab anima omnium. Hic conjungit et disjungit et rejungit quando vult. Lupus noster in Oriente invenitur et canis in Occidente, iste momordit illum, et ille momordit istum, et fiunt rabidi ambo et interficiunt se adinvicem, donec fiat ex eis tossicum et tyriacha. Hic est lapis occultatus tam ab hominibus quam a demonibus.⁷⁸ Camelus noster albus septimus est in numero apud philosophos magnos. Sol cum Luna, Jupiter, Mars et Venus nostra in Mercurio nostro, et Saturnus septimus eorum, in quo sunt omnes conjuncti simul. Hic est spata, gladius et cultellus et incisorium super hedificium, et inimi-

cus ad manum, et vas cum adjutorio vini. Serpens noster ut color venarum vel violarum et anima citrina ut citrinitas narges vel ypoquistidos.⁷⁹ Tunc lapidem in fluvio currenti, per motorem⁸⁰ omnium non mentior. Exemplum nostrum cum albo nature ignis et lux in claritatis essentia, et ignis et lux est scintilla nostra et titio noster candens, et cum hoc et hoc invenies scientiam. Veritatem dixi per videntem⁸¹ omnia. Scala nostra est turris nostra de terra viscosa, et terra viscosa est lutum nostrum et cerotum nostrum ex cera et sepo confectum, et hic et hic navis nostra in mari nostro plena gygantum. Aperui quod occultaverunt priores. Non sum invidus quemadmodum ipsi fuerunt. Per illuminantem cuncta non mentior. Terra coram oculis posita Oriens et Occidens, et hic et hic narcissus cum lilio nostro, et hic et hic cum sene nostro, et senex noster et uter noster est corpus nostrum, et corpus nostrum est lapis noster quesitus a multis, inventus a paucis. Et istud exposui ex pietate, et detexi cunctis per Deum gentium⁸². Amen.

Notes

¹ The Arabic text of the *Turba* was written around 900, according to Martin Plessner, *Vorsokratische Philosophie und griechische Alchemie in arabisch-lateinischer Überlieferung. Studien zu Text und Inhalt der Turba Philosophorum*, ed. by F. Klein-Franke, Wiesbaden: Franz Steiner, 1975, pp. 129-131. Bink Hallum has confirmed this dating in his recent paper, « The *Tome of Images*: an Arabic Compilation of Texts by Zosimos of Panopolis and a Source of the *Turba Philosophorum* », *Ambix*, 56 (2009), pp. 76-88, here pp. 86-88. The oldest Latin manuscripts stem from the 13th century (Univ. of Glasgow, Hunterian Library, MS. 253; Krakow, Biblioteka Jagiellońska, MS. lat. quart. Berol. 584 [formerly Berlin, Preußische Staatsbibl.]). See Julius Ruska, *Turba Philosophorum. Ein Beitrag zur Geschichte der Alchemie*, Berlin: Julius Springer, 1931, pp. 71 and 73.

² On the actual names of the speakers, see Ruska, pp. 23-25; Plessner, pp. 64-70 on Locustor (not identified by Ruska as Ecphantos). On the relationship of the second part of the *Turba* to the first, see Plessner, esp. pp. 107-117.

³ Plessner, pp. 21-28 and *passim*; see also Plessner, « The *Turba Philosophorum*. A Preliminary Report on Three Cambridge Manuscripts », *Ambix*, 7 (1959), pp. 159-163. Other relevant studies on, and discussions of the *Turba*—but not on its Latin textual tradition—include Fuat Sezgin, *Geschichte des arabischen Schrifttums*, vol. IV (Leiden: Brill, 1971), pp. 60-66; Manfred Ullmann, *Die Natur- und Geheimwissenschaften im Islam* (Leiden: Brill, 1972), pp. 213-216; Ulrich Rudolph, « Christliche Theologie und vorsokratische Lehren in der *Turba philosophorum* », *Oriens*, 32 (1990), pp. 97-123.

⁴ Some early brief extracts in Latin and Italian seem to be extant in London, Wellcome Library, MS. 758 (ca. 1500), fol. 2r^o-6r^o. English 15th-century extracts from the *Turba* have been mentioned by D. W. Singer, *Catalogue of Latin and Vernacular Alchemical Manuscripts in Great Britain and Ireland dating from before the XVI Century*, Bruxelles: Maurice Lamertin, 1928-1931, p. 5 (mentioned again by Ruska, *Turba Philosophorum*, p. 94). A modern English translation has

been made in 1896 by A. E. Waite after the version B (according to Martin Plessner, *Vorsokratische Philosophie*—as in n. 1 above—, p. 23, n. 51. See *The Turba Philosophorum, or Assembly of the Sages*, transl. by A. E. Waite, London : George Redway, 1896 (<http://www.archive.org/details/turbaphilosophor00gratiala>, accessed 5 October 2010). Waite assumed there (pp. iii-iv) that the 18th-century English version of the *Turba* found at the British Library, MS. Sloane 3613, was not translated from the Latin, but from the French.

⁵ Joachim Telle, « *Turba philosophorum* », in K. Ruh *et alii* (eds.), *Die deutsche Literatur des Mittelalters. Verfasserlexikon*, vol. 9, Berlin-New York : W. de Gruyter, 1995, col. 1151-1157.

⁶ The printed tradition has been accurately described for the first time by Moritz Steinschneider, *Die europäischen Übersetzungen aus dem Arabischen bis Mitte des 17. Jahrhunderts* (1904-1905), reprint Graz : Akademische Druck- und Verlagsanstalt, 1956, Part 2, pp. 63-65. In 1572, versions B and C were edited by Guillaume Rascalon in *Auriferæ artis quam Chemiam vocant, antiquissimi authores sive Turba philosophorum* (Basle : Pietro Perna, 1572, vol. I, pp. 1-69 and 71-151). The version A was edited in 1622 by Isaac Habrecht in vol. V of the *Theatrum Chemicum* (Strasburg : Lazar Zetzner, 1622, pp. 1-63).

⁷ On the German printed translations, see Telle, « *Turba philosophorum* » (as in n. 5 above) : the version B was first translated by Lorenz Joha in Paul Hildenbrandt (ed.), *Auriferæ Artis. Das ist / Der Goldtkunst [...]* (1597) ; another translation of version B, by Philipp Morgenstern, appeared in Ph. Morgenstern, *Turba Philosophorum ; Das ist / Das Buch von der gülden Kunst [...]* (1613) (with a comparison between versions B and C).

⁸ This version was the XVth-century translation ; it was edited by Millet de Bosnay in *Trois Traitez de la Philosophie Naturelle, non encores imprimez ; sçavoir, La Turbe des Philosophes, qui est appellé le Code de verité en l'art, autre que la Latine. Plus, La Parole Delaissee de Bernard Trevisan. Et un petit traicté, tres-ancien, intitulé, Les Douze Portes d'Alchymie, autres que celles de Ripla*, Paris : Jean Sara, 1618, pp. 1-65.

⁹ Versions B and C were reissued in 1593 and 1610 (*Artis auriferæ, quam Chemiam vocant, volumina duo, quæ continent Turbam philosophorum [...]*, Basle : Konrad Waldkirch, 1593, vol. I, pp. 1-65 and 66-139 ; *ibid.*, 1610, vol. I, pp. 1-42 and 43-89). The version C appeared again in J. J. Manget, *Bibliotheca Chémica Curiosa* (Geneva : Chouet *et alii*, 1702, vol. I, pp. 480-494). The version A was reissued in 1659 (*Theatrum Chemicum*, vol. V, Strasburg : heirs of Eberhard Zetzner, 1659, pp. 1-52), and it appeared again in 1702 in J. J. Manget, *ibid.* (vol. I, pp. 445-465). The 1597 German translation was reissued in 1608 and 1614 ; see Telle, « *Turba philosophorum* » (as in note 5 above). The French translation was reissued in 1672—slightly altered—in *Divers Traitez de la Philosophie Naturelle* (Paris : Jean d'Houry, 1672, pp. 1-96, available on GoogleBooks) and again the same year in [Nicolas Salomon], *Bibliothèque des Philosophes [Chymiques]* (Paris : Charles Angot, 1672, vol. I, pp. 13-48), which appeared again in 1741 in J. Maugin de Richebourg, *Bibliothèque des Philosophes chimiques. Nouvelle édition* (vol. II, Paris : André Cailleau, 1741, pp. 1-55). The 1672 edition from the

Bibliothèque des Philosophes [Chymiques] has been reprinted in 1977 in a small collection entitled *Bibliotheca Esoterica : La Tourbe des philosophes. Hermès Trismégiste, Les Sept chapitres. Charles VI, L'Œuvre royale. Lavinius, Traité du ciel terrestre* (Paris : Jobert, 1977, pp. 7-44).

¹⁰ See Didier Kahn, *Alchimie et paracelsisme en France à la fin de la Renaissance* (Geneva : Droz, 2007), pp. 95-96.

¹¹ Tancke re-edited in 1614 the Laurentius German translation of the *Turba*. See Udo Benzenhöfer, « Joachim Tancke (1557-1609). Leben und Werk eines Leipziger Paracelsisten », *Paracelsus und Paracelsisten. Vorträge 1984/85*, Vienna, 1987 (*Salzburger Beiträge zur Paracelsusforschung*, Folge 25), pp. 9-81.

¹² See Didier Kahn, « Le fonds Caprara de manuscrits alchimiques de la Bibliothèque Universitaire de Bologne », *Scriptorium*, 48 (1994), pp. 62-110, here pp. 88-91.

¹³ See Didier Kahn, « La *Bibliotheca Chimica* de Pierre Borel (1654) », in J. Ducos (ed.), *Le Livre scientifique (1450-1850)*, forthcoming.

¹⁴ See Ruska (as in n. 1 above), pp. 288-291.

¹⁵ The same might be true for pseudo-Plutarchus, *Placita philosophorum*. See, for instance, the very first discourse of the *Turba* (ed. Ruska, pp. 109-110). On the influence of the *Testamentum* on early modern alchemical natural philosophy, see D. Kahn, « Le *Tractatus de sulphure* de Michaël Sendivogius (1616), une alchimie entre philosophie naturelle et mystique », in Cl. Thomasset (ed.), *L'Écriture du texte scientifique au Moyen Âge*, Paris : PUPS, 2006, pp. 193-221, and my prefaces to *Le Testament du pseudo-Raymond Lulle*, transl. by H. van Kasteel (Grez-Doiceau : Beya, 2006, pp. vii-xviii), and to Jean d'Espagnet, *La Philosophie naturelle rétablie en sa pureté* (1651) (Grez-Doiceau : Beya, 2007, pp. xi-xxxvi).

¹⁶ See Sven Limbeck, « Die *Visio Arislei*. Überlieferung, Inhalt und Nachleben einer alchemischen Allegorie. Mit Edition einer Versfassung », in W. Kühlmann and W.-D. Müller-Jahnke (eds.), *Iliaster : Literatur und Naturkunde in der frühen Neuzeit. Festgabe für Joachim Telle zum 60. Geburtstag*, Heidelberg : Manutius Verlag, 1999, pp. 167-190. On the origins of Andreae's text, see Carlos Gilly, « Die Rosenkreuzer als europäisches Phänomen im 17. Jahrhundert und die verschlungenen Pfade der Forschung », in C. Gilly and F. Niewöhner (eds.), *Rosenkreuz als europäisches Phänomen im 17. Jahrhundert*, Amsterdam : In de Pelikaan, 2002, pp. 19-57.

¹⁷ *Atalanta's Emblem L*, among others, is a mere rewriting of the end of *sermo* 59 of the Latin *Turba* (version A, ed. Ruska, p. 162 ; on this topic, see Plessner, *Vorsokratische Philosophie*, pp. 122-123 and 125, which should be completed by Bink Hallum (as in n. 1 above)).

¹⁸ As already showed by Joachim Telle, « Alchemie », *Theologische Realenzyklopädie*, vol. II (Berlin-New York : W. de Gruyter, 1978, pp. 199-227), William R. Newman, *Gehennical Fire. The Lives of George Starkey, an American Alchemist in the Scientific Revolution* (Cambridge, Mass. : Harvard University Press, 1994), and Lawrence M. Principe, « Diversity in Alchemy. The Case of Gaston "Claveus" DuClos, a Scholastic Mercurialist Chrysopoeian », in A. G. Debus and M. T. Walton (eds.), *Reading the Book of Nature* (Kirkville : Sixteenth Century

Journal Publishers, 1998), pp. 181-200. One might also mention the *Consilium Sapientium seu Parva Turba Philosophorum*, an anonymous 17th-century imitation of the *Turba*, apparently published in 1675 and known to Leibniz. See <http://subsecivaelitterae.blogspot.com/2008/06/leibniz-lecteur-de-fontialis-propos-du.html> (accessed 5 October 2010).

¹⁹ Bernard le Trévisan, *Le Livre de venerable Docteur Allemant Messiere Bernard Conte de la Marche Trevisane*, in D. Zecaire, *Opusculé tres-excellent, de la vraye philosophie naturelle des metaulx* (Antwerpen : Guillaume Silvius, 1567), pp. 117-191. See Didier Kahn, « Recherches sur le *Livre* attribué au prétendu Bernard le Trévisan (fin du XV^e siècle) », in C. Crisciani and A. Paravicini Bagliani (eds.), *Alchimia e medicina nel Medioevo* (Florence : SISMELE - Edizioni del Galluzzo, 2003), pp. 265-336.

²⁰ On this text written around 1560 by the calvinist alchemist D. Zecaire, from Condom (Guyenne), see the critical edition by Renan Crouvizier : D. Zecaire, *Opusculé* [...], Paris-Mailand : S.É.H.A.-Archè, 1999 (*Textes et Travaux de Chrysopoeia*, 6). Nothing allows us to follow the initiative of Gérard Dorn in expanding that D. into « Dionysius » (Denis), as Dorn did in his 1583 Latin translation of the text, nor to adopt the erroneous spelling of « Zacaire », derived from the 1574 reissue of the *Opusculé* in Lyons and taken up by Dorn (« Zacharius ») and all his followers. The genuine name « Zecaire »—witnessed by the first edition (1567) as well as the only French manuscript (ca. 1560)—actually was an anagram of the author's real name, « Cerasius » (with *z* instead of *s*), a name that Crouvizier was not able to trace, despite his efforts, in any available archives of the period concerned. See Crouvizier's outstanding work, pp. 31 and 48-55.

²¹ Kahn, « Recherches sur le *Livre* » (see n. 19 above), pp. 265-266, n. 1, and pp. 312-315.

²² At first sight, one might invoke as well other possible sources to the text of Bernard le Trévisan ; but I already showed why this objection must be rejected ; see Kahn, « Recherches » (as in n. 19 above), pp. 300-302. I give here the text of the oldest manuscript, written by Oronce Finé in 1537 : Paris, BnF, MS. lat. 7147, fol. 64r^o-v^o. This version has been edited by Paulette Duval with an incredibly foolish introduction and an often inaccurate punctuation. See Duval, « La *Turba philosophorum Gallica*. Édition de la version française de la *Turba philosophorum*, d'après le manuscrit de la Bibliothèque nationale, avec un commentaire », *Les Cahiers de Fontenay*, 33 (Dec. 1983), pp. 9-67, here p. 51 ; and see below, n. 31.

²³ Version A has 21 pages in Manget (see n. 9 above), version C only 15 pages.

²⁴ Steinschneider (as in n. 6 above) ; Ruska, *Turba Philosophorum*, pp. 3-7.

²⁵ Plessner, *Vorsokratische Philosophie* (see n. 1 above), p. 23, n. 51 *in fine*, and p. 30 on the relevance of version B.

²⁶ See the comparative columns in Ruska, *Turba Philosophorum*, pp. 4-6. For a better understanding of these sometimes misleading columns, it must be noted that whereas discourses IV, V, XII, XIII and XIV from version A actually lack in version B, a look on Ruska's columns leads to the opinion that two more discourses from A are not found in B (discourses LXIV and LXVII) and, conversely, six other discourses from version B are not found in A. The actual

situation is slightly different (it has been already commented by Ruska, pp. 60-67, for several discourses ; in the following lines, the Roman numerals always point out to version A). The discourse of Zimon in version B (between XIV and XV from A) is not peculiar to version B, but it actually corresponds to the second § of discourse XVI from A (Socrates) ; in turn, the posterioir discourse of Socrates in B only corresponds to the first § of the same discourse XVI. Later on in version B, the discourses of Eximenus, Anaxagoras and Aziratus (between discourses LII and LIII from A) respectively correspond to discourses LIII (Eximenus, only the second half), LIV (Anaxagoras) and LVII (Acratus) from A, all of which being then repeated in B under the names of Obsemeganus, Anaxagoras and Astratus. Later on, the discourse of Rarson in version B does not exactly correspond to the discourse LXIII (Philosophus) from version A, but it rather gives first a variant text of LXIV (Pythagoras), followed by the first part of LXIII. Then comes Agadimon in version B, corresponding to the second part of LXIII. Then comes in B Orfulus, corresponding with LXV (Horfolcus) as indicated by Ruska. But then, the discourse of Emiganus in version B takes up both discourses LXVI (Exemiganus) and LXVII (Lucas). Finally, the discourse of Philotis in version B corresponds to lines 7 to 15 of the discourse LXXII (Philosophus ; see Ruska, p. 169, lines 13-21), to which have been added some lines perhaps reminiscent of the *Tabula smaragdina* (« Est autem totum magisterium, ut superius fiat inferius, & inferius superius fiat, & coquatur, donec plumbum æris fluat cum fermento, in principio, vel medio, vel fine adhibito, & tunc tingit, cum ut cera fluet projectus »), a fact that might explain why, in a 15th-century composite manuscript evoked by Ruska (St. Gall, Stadtbibl., Vadiana Sammlung, MS. 390, fol. 115-121), extracts of the *Turba* seem to be mixed with the *Tabula smaragdina* itself (see Ruska, p. 93).

²⁷ Kahn, « Recherches » (see n. 19 above), pp. 302-303 and n. 119.

²⁸ See below, Appendice 1.

²⁹ He notably was the very first editor of Roger Bacon's *De mirabili potestate artis et naturæ* (Paris : Simon de Colines, 1542). See Kahn (as in n. 10 above), pp. 73-74. And see n. 70 below.

³⁰ See discourse 34 (Paris, BnF, MS. lat. 7147, fol. 62r° ; ed. Duval, p. 45) : « Faictes deux troys et troys ung. Ung avec trois c'est quatre, quatre, trois, deux, ung. De quatre à trois il y ha ung, de trois à quatre il y ha ung. Ung doncques, et ung, trois et quatre. De trois à ung il y ha deux, de deux à trois ung, et de trois à deux ung. Ung ung doncques deux, et trois ung et ung deux et deux et deux à ung ung, de ung à deux ung ; ung doncques deux ung. Je vous ay tout dit. » On the relevant passage in the Latin *Turba* (end of discourse LIII by Eximenus ; ed. Ruska, p. 157), see the discussion in Plessner, pp. 116-117, who has yet overlooked the parallel passage in *Distinctio* XIV of the *Allegorie sapientum*, ed. Manget (see n. 9 above), I, p. 475a. And see discourse 50 (MS. lat. 7147, fol. 64v° ; ed. Duval, p. 53 ; no corresponding Latin text known to me) : « Le premier est noir, le second blanc, le tiers rouge, 80, 120, 180. Deux les font, et ilz sont faictz 120. Gomme, laict, marbre, lune 280, arain, fer, saffran, sang 80, peche, poyvre noire. Si vous me entendez, vous estes bien heureux [...] »

³¹ See Ruska, pp. 94-97 (with quotations of the French text). While Steinschneider just mentioned it (*Die europäischen Übersetzungen aus dem Arabischen*, as in n. 6 above, 2nd pagination, p. 65), Ruska superficially examined two manuscripts, notably Finé's copy, but he could not examine the 1618 and 1672 editions at all (see Ruska, pp. 7 and 97). It is better not to enter into too many details on Paulette Duval's surprising aberrations (as n. 22 above, pp. 11-14). Duval, who believed the Finé manuscript to be the only one preserving the text of the French *Turba*, tried to show that it was a French translation from the Castilian. With such exotic arguments as if she had assessed the influence of the *Turba* on the music of Professor Longhair, she assumed that the supposed Castilian model had been directly translated from the Greek into Castilian in the 12th century, perhaps by Robert de « Ketene » himself (as she named him), i.e. the famous translator of the *Morienus* (1144). Furthermore, in her doctoral thesis (1975, published in 1979), she tried to show that the prologue of Chrétien de Troyes' *Le Conte du Graal* (ca. 1181), a masterpiece of old French poetry on spring renewal, was influenced by the French *Turba*—a comparison almost rivalling, in its degree of accuracy and its aesthetics of surprise, Lautréamont's famous « chance encounter of a sewing-machine and an umbrella on a dissecting-table » (*Les Chants de Maldoror*, VI, 3). See Duval, *La Pensée alchimique et le Conte du Graal. Recherches sur les structures (Gestalten) de la pensée alchimique, leurs correspondances dans le Conte du Graal de Chrétien de Troyes et l'influence de l'Espagne mozarabe de l'Èbre sur la pensée symbolique de l'œuvre*, Paris : Champion, 1979. On the modern fancies about Grail, Arthurian novels and alchemy, see Kahn, « Présence et absence de l'alchimie dans la littérature romanesque médiévale », in the forthcoming proceedings of the 2008 conference *Savoirs et fictions au Moyen Age* (Paris : PUPS, 2011).

³² « *Turba*-literature in the broad sense » (Ruska, pp. 318-333).

³³ Plessner (see n. 1 above), p. 7, n. 6 ; p. 23, end of n. 51, and p. 28, n. 60. Plessner's opinion rested on the alleged extracts from the French version given by Waite in some notes of the latter's English translation of the *Turba* (see n. 4 above), pp. 2-3 (see also *ibid.*, p. iii). I recently realized that Waite had actually confused, in his notes, the French translation of the *Divers traitez* from 1672 (see n. 9 above) with the version C of the Latin *Turba*, which renders Plessner's remarks on the French version quite useless.

³⁴ See Robert Halleux, « L'alchimie », *Grundriss der romanischen Literaturen des Mittelalters*, vol. VIII/1 : *La Littérature française aux XIV^e et XV^e siècles*, Heidelberg : Carl Winter Verlag, 1988, pp. 336-345, here p. 343.

³⁵ See my presentation of Floretus à Bethabor, *Vision advenue en songe à Ben Adam au temps du règne de Rucharetz roi d'Adama*, in *Chrysopaïa*, 2 (1988), pp. 249-274, here pp. 254-260, and my edition of *Les Sept visions de Marie la Prophetesse*, in *Chrysopaïa*, 2 (1988), pp. 368-384.

³⁶ « You should have listened. »

³⁷ Ruska, p. 71 (Krakow, MS. lat. quart. Berol. 584, fol. 21v°-22v°).

³⁸ Ruska, pp. 323-324, here p. 324 : « Distinctio epistolæ fratris Arislei, scilicet Visio, quam exempli causa ad hujus artis opus composuit [...]. » On the *Visio Arislei*, see n. 16 above.

³⁹ In St. Gall, Kantonsbibl., Vadiana Sammlung, MS. 389 (that Ruska used as well in his edition of the *Turba*), fol. 82r°-84r°, the *Visio Arislei* is found at the same place as in the Berlin MS (see above, n. 37). See Limbeck, « Die *Visio Arislei* » (as above, n. 16), p. 169, n. 5, who gives the foliation. Another 15th-century manuscript (*Liber turbe*, in Paris, BnF, MS. fr. 12481, fol. 64r°-78r°), not recorded in James Corbett, *Catalogue des manuscrits alchimiques latins, I : Manuscrits des bibliothèques publiques de Paris antérieurs au XVII^e siècle* (Bruxelles : Union Académique Internationale, 1939), presents itself like those of Berlin and St. Gall. The same is true for Bologna, Bibl. univ., MS. 457, b. IX, fasc. 3, copied and translated into French by Jacobus Securivagus in 1558, on which see D. Kahn, « Le fonds Caprara » (as in n. 12 above), pp. 93-95. In three other manuscripts of a longer version of the *Turba* studied by Plessner (see above, n. 3), comprising not 72 *sermones* as version A, but 79, the *Visio* appears as *sermo* 74. Limbeck has recently added to these at least two other manuscripts : one in Coburg (Landesbibl., MS. Cas. 26, fol. 20v°a-21r°a), the other in Cambridge (Trinity College, MS. O.8.5, fol. 153-156). He has also noticed six other manuscripts unknown to Ruska, still to be explored. See Limbeck, « Die *Visio Arislei* » (as above, n. 16), pp. 168-169 and n. 7 and 9.

⁴⁰ I verified it in the seven following manuscripts : Paris, BnF, MS. lat. 7147 (AD 1537) ; Bologna, Bibl. Univ., MS. 457, b. IV, fasc. 4 (ca. 1543-1548) ; Bologna, Bibl. Univ., MS. 457, b. XX, fasc. 4 (AD 1547) ; Bologna, Bibl. Univ., MS. 457, b. XXX, fasc. 1 (AD 1550) ; Bologna, Bibl. Univ., MS. 457, b. XXVI, fasc. 3 (AD 1555) ; Paris, Bibl. Sainte-Geneviève, MS. 2245 (ca. 1605) ; Paris, Bibl. Sainte-Geneviève, MS. 2205 (early 17th c.).

⁴¹ See ed. Ruska, p. 324 (*Visio Arislei*) : « [...] ait Pictagoras : Vos scribitis et scripsistis jam posteris, qualiter hæc pretiosissima arbor plantatur, cujus fructus qui comedit, non esuriat unquam. » As noticed Ruska himself (p. 324, n. 3), this refers to *sermo* LVIII (Balgus), *ibid.*, p. 161 (Bonitis speaking to Balgus) : « Cur arborem dimisisti narrare, cujus fructum qui comedit, bon esuriat unquam ? [Might this allude to *sermo* XXXIX, ed. Ruska, p. 147, lines 3 to 8 ?] Et Balgus : Notificavit mihi quidam, qui scientiam consecutus est, quousque illam inveniens arborem convenienter operatus est ac fructu extracto comedit. » [Etc.]

⁴² A witness is St. Gall, Kantonsbibl., Vadiana Sammlung, MS. 390, fol. 118v°-121r°, described by Ruska, p. 93 (see also Limbeck, p. 169, n. 5).

⁴³ See *sermo* XVIII (ed. Ruska, pp. 127-128 ; I print the relevant words in italics) : « Investigatores hujus artis, sciendum est, quod philosophi in libris suis *gummam* multipliciter narraverunt, quæ nihil aliud est quam aqua permanens, ex qua preciosissimus lapis generatur. [...] Accipite ergo ex *gumma* alba intensissimi candoris partem unam [...] His transactis calore solis congelate, donec dessicetur, deinde coquite ipsum mixtum cum *lacte* fermenti, quousque *lac* deficiat ; deinde ipsum extrahite [...] Deinde cum ficus *lacte* ipsum miscete et coquite, donec

humor ille dessicetur in composito ; quod postea cum radicis herbæ lacte miscete et coquite [...]. »

⁴⁴ Paris, BnF, MS. lat. 7147, fol. 58v°-59r° (ed. Duval, pp. 33-35 ; I print the relevant words in italics) : « Nostre *gomme* coagule nostre *laict*, et nostre *laict* dissoult nostre *gomme* ; et croissent dedens la pierre de paradis qui est le boys de vie : en laquelle y ha deux contraires ensemble, c'est assavoir feu et eaue. Cestuy cy vivifie cestuy la. Et cestuy [cy] tue cestuy la. [...] »

⁴⁵ TK 540 (TK = L. Thorndike and P. Kibre, *A Catalogue of Incipits of Mediæval Scientific Writings in Latin*, 2nd ed., Cambridge, Mass. : The Mediaeval Academy of America, 1963). See also Julius Ruska, « Pseudepigraphie Rasis-Schriften », *Osiris*, 7 (1939), pp. 31-94, here p. 87 (with all quotations by Petrus Bonus).

I know four manuscripts and a single edition of this text :

- Palermo, Bibl. Comunale, MS. 4° Qq A 10 (14th c.), fol. 389v°-390r° = 410v°-411r° (*Epistola Rasis*) (Carini, 46-32). Described by Diego Ciccarelli in *Catalogo di manoscritti filosofici nelle biblioteche italiane*, vol. VII, Florence : Olschki, 1993, pp. 97-105, here p. 103 (a text very close to the printed text listed below).

- Florence, Bibl. Riccardiana, MS. L.III.13 119 (14th-15th c.), fol. 15v°b-16r°b (*Exemplum scientie nostre*). See Adriaan Pattin, « Un recueil alchimique : le manuscrit Firenze, Bibl. Riccardiana, L.III.13. 119 », *Bulletin de philosophie médiévale*, 14 (1972), pp. 89-107, here pp. 92-93.

- London, British Library, MS. Sloane 276 (15th c.), fol. 74r°-v° (*Epistola Rasis philosophi*). See Singer, *Catalogue* (as in n. 4 above), #120.

- Bologna, Bibl. Univ., MS. 104 (lat. 138) (a compendium of very diverse texts dated 1476), fol. 126r°-129r°, attributed to Arnaldus de Villanova and entitled *Flos lilii*. See L. Frati, « Indice dei codici latini conservati nella R. Biblioteca Universitaria di Bologna », *Studi italiani di filologia classica*, XVI, 1908, pp. 103-432, here p. 156. Here too, the text seems almost identical to the printed version listed below, according to L. Thorndike, *A History of Magic and Experimental Science*, vol. III, New York : Columbia University Press, 1934, pp. 660-661.

- The text appeared without a title in the *Liber Geber*, n.p., n.d. [Rome : printer of the “Vitruvius”, ca. 1486-1488], pp. [202]-[206], preceded by the *Epistola Alexandri* (TK 1244 and 1245) and followed by the small text later entitled *Allegoria Merlini* (see below, n. 63). Like this whole *incunabulum*, our text was revised in 1525 (see Kahn 2007 [as in n. 10 above], pp. 60-62), and it was then reprinted many times until 1572, when it was taken up in vol. I of *Artis auriferæ*, between the two same texts as in *Liber Geber*. It is found again more than a century later in the *Ginæceum Chemicum seu Congeries plurium Authorum Qui in Artem Hermeticam de Lapide Philosophico scripserunt, quorum Tractatus nec in Theatro, aut alio volumine usque adhuc simul impressi fuerunt*, vol. I (no other volume ever appeared), Lyons : Jean de Trevis, 1679, pp. 566-568.

⁴⁶ I give here the text of the Riccardiana MS., more correct than the printed text—at least for this passage.

⁴⁷ See below, in the Appendice, my edition of the French and Latin texts.

⁴⁸ Sébastien Moureau (whom I warmly thank) provided me with some explanations on these words. *Ypoquistidos* is a Spanish spelling for *hypocistis*, i.e. *cytinus*

hypocistis, a parasiting flowering plant infecting notably cistus, mentioned by Dioscorides (e.g. I, 127) and often cited in medieval treatises of medicine and botanics. It is not recorded as an Arabic transcription from the Greek in specialized dictionaries, but none of those is, of course, exhaustive. As to *narges*, it is a transcription from the Arabic *narjis* (narcissus). See Federico Corriente, *Dictionary of Arabic and Allied Loanwords. Spanish, Portuguese, Catalan, Galician and Kindred Dialects*, Leiden : Brill, 2008, p. 163.

⁴⁹ In his *Theophrasti Paracelsi [...] Compendium* (ed. Basle : Pietro Perna, 1568, p. 198), Jacques Gohory quoted the *Epistola Rasis* as if it was part of the *Turba* : « Sic in monumentis Turbæ philosophorum, scribitur ænigmatice : Canis meus ab Oriente & tuus ab Occidente concurrerunt, unus alium momordit, &c. » Most probably, here Gohory quoted the French *Turba*.

⁵⁰ I give only two examples. —1° Compare the end of discourse 3 (Arisleus) of the French text (ed. Duval, p. 21) with *sermo* X (Arisleus) of version A (ed. Ruska, p. 118) : « Cestuy cy est bien arain bruslé, et est levain de l'or, lequel digerez en l'eaue permanente qui est avecques luy tousjours, et digerez jusques à ce qu'il soyt deseiché. » This agrees almost perfectly with the text of Ruska (« Hoc igitur est aes combustum, quod est auri fermentum et auri flos, quod aqua dirigite permanente, deinde dirigite, donec dessicetur. »), except that in the variants given by Ruska, (E) and (G) have *digerite* instead of *dirigite*, as in the French version. —2° Here is the beginning of *sermo* X : « deinde maris nostri aquae imponite, quae est aqua permanens, postquam regitur. » The French version reads thus : « et les mettez dedens l'eaue de nostre marine, laquelle est eaue permanente. » Now we see in Ruska's variants that (E) omits the two last words : « postquam regitur », as does the French version.

⁵¹ See the explanations by Ruska, p. 253, n. 1 and 2.

⁵² E.g. the discourse 25 of Balcus (ed. Duval, p. 41) : « Je vous dis que la mere porte le deul de son filz, et le filz porte la robe de joye sanguine de la mort de sa mere : et ainsy se recompensent l'ung l'autre. La mere neantmoins est tousjours plus piteuse à l'enfant que n'est l'enfant à sa mere. » See also above, for example, my quotation of the discourse 33 (Azarus), and all the discourses marked in the columns above with the sign Ø.

⁵³ See Limbeck (as in n. 16 above), p. 168.

⁵⁴ Plessner, as in n. 3 above.

⁵⁵ *Ibid.*, p. 160.

⁵⁶ I could not check yet by myself Cambridge Univ. Libr., MS. Ff.iv.12 ; therefore I omit it in the following table. As I could not verify the very end of the Trinity College MS. as well, I can only put question marks for its last three discourses.

⁵⁷ Plessner (as in n. 3 above), pp. 160-161 and 162.

⁵⁸ *Ibid.*, p. 162.

⁵⁹ TK 142 = Venice, Bibl. Nazionale Marciana, MS. Lat. VI, 215 (AD 1475), fol. 284-293.

⁶⁰ Plessner (as in n. 3 above), pp. 162-163.

⁶¹ Cambridge, Trinity College Libr., MS. O.2.18, fol. 31r°.

⁶² Printed in Manget (as in n. 9 above), I, pp. 467a-479b, here pp. 478b-479a.

⁶³ On the *Allegoria Merlini*, see D. Kahn, « Littérature et alchimie au Moyen Age : de quelques textes alchimiques attribués à Arthur et Merlin », *Le Crise dell'Alchimia / The Crisis of Alchemy*, in *Micrologus*, 3 (1995), pp. 227-262, here pp. 243-250 and 257-262.

⁶⁴ Plessner (as in n. 3 above), p. 163.

⁶⁵ *Ibid.*, p. 162.

⁶⁶ TK 747 = Florence, Bibl. Laurenziana, Laurent. Plut. 30, MS. 29, fol. 51v°. See D. Kahn (as in n. 63 above), pp. 233-236.

⁶⁷ See above, n. 45, *in fine*.

⁶⁸ See my edition of this text in the next issue of *Chrysopæia*, forthcoming.

⁶⁹ We do not know anything on the physician François Alary (*flor.* 1695-1702). See D. Kahn, « Littérature ou alchimie ? À la recherche de l'authentique *Songe vert* », *The Culture of the book. Essays from two Hemispheres in honour of Wallace Kirsop*, Melbourne : Bibliographical Society of Australia and New Zealand, 1999, pp. 218-231.

⁷⁰ Here is a note in the margin : « Idem ex Gebero in Epistola Alexandri », which shows that Finé was aware of the identity of this discourse with the *Epistola Rasis*, and of the edition of the latter in the incunabulum called *Liber Geber*.

⁷¹ I have brought some emendations to the printed text (= G) by using the Palermo and Florence MSS. (see n. 45 above), hereafter designated as P and F.

⁷² montem P F : mortem G // *post ignis add.* ejus P G

⁷³ *ante cera add.* senex G // vel P : ut F ut puer G. (On the word *ypoquistidos*, see n. 48 above.)

⁷⁴ qui omnibus ... lumen F : qui fecit oriri lapidis paradisi auctorem lumen G qui fecit oriri auctorem. Lapis paradisi, lumen P

⁷⁵ cum Persia in secretis G P : Persia et ceteris F. Note that the same parallel and contrast between Egypt and Persia is found in the *Tractatus Micreris suo discipulo Mirnefindo* (in *Theatrum Chemicum*, vol. V, pp. 91, 95, 98). On this text—the first of the texts listed by Ruska as « Turbaliteratur im weiteren Sinne »—, see Steinschneider (as in n. 6 above), p. 25, n° 154 c ; Ruska, pp. 320-323 ; TK 876 ; Sezgin (as in n. 3 above), pp. 105-106 ; Ullmann (as in n. 3 above), pp. 177-178.

⁷⁶ de terra ... cum istis P F : *om.* G // *operat conj.* : operatio P F

⁷⁷ naturam geminam P : naturas germinatas F naturam gemmatam G

⁷⁸ ille (momordit) P F : iste G // Hic est ... demonibus P : Hic lapis occultatus est ab hominibus et demonibus F *om.* G

⁷⁹ Serpens P F : Episcopus G // citrinitas narges P F : citrinitas et narges G. (On the words *narges* and *ypoquistidos*, see n. 48 above.)

⁸⁰ motorem F : mortem P G

⁸¹ videntem P F : unientem G

⁸² gentium P : *om.* F genitum G

PARACELSUS IN PANNONIA: ALCHEMY AND MEDICINE IN COUNT BOLDIZSÁR BATTYÁNY'S CIRCLE*

DÓRA BOBORY,
INSTITUTE OF HABSBURG HISTORY (BUDAPEST)

'Trismegistus Germanus' and Hungary

"Diseases travel hither and thither throughout the breadth of the world. If a man wishes to recognise many diseases, let him travel."¹ These are the words of Paracelsus (1493–1541), one of the most controversial figures of his time, who did all his best to mark his contribution to medicine as brand new and his person as exceptional, and his bombastic language, his many scandals and his odd ways provided ample material to remember him by in the centuries to follow. He sure took his own advice to heart and, in the course of his infinite wanderings he visited also the Kingdom of Hungary.

His experiences in Hungary—as recorded in various writings by, and attributed to Paracelsus—vary from fabulous to ridiculous. That he was warmly received by the magistrates of the city of Pozsony (Pressburg/Bratislava) in Upper Hungary and honoured with a feast in 1537, is attested to by the town records which give a detailed description of the expenses of the luncheon.² It seems plausible that it was primarily the mineral riches of the country, acknowledged by other alchemists too,³ that attracted Paracelsus to Hungary, and he also reproduced the legend of the *aqua mirabilis Hungarica*, the miraculous waters in the mines of Szomolnok and Úrvölgy which were believed to have the ability to transform iron into copper.⁴ He also praised Hungarian antimony (*antimonium Hungaricum*) which, according to him, was of high quality because Hungary lay in the East, that is, closer to the Sun, and thus, local antimony contained more of the 'Sun corpuscles' (*corpuscula solis*).⁵ Paracelsus revived also the legend of the golden grapes of Tokaj claiming to have seen clusters of those with his own eyes, and expressing his awe

upon the fact that the soil on the hills of the famous wine-producing region was so rich in gold that the grapes should absorb it.⁶

Other episodes connected to the travels of Paracelsus in Hungary belong even more to the realm of supernatural phenomena, such as the sign in the sky that he claimed to have seen in 1536. This sign took the shape of a tongue, which was as thick as a finger and was covered with black dots that resembled pearls. From this omen Paracelsus predicted the coming of the plague which, indeed, had devastated Hungary the same year.⁷ The story about Paracelsus' encounter with foraying 'Tartar' (Turkish) troops, however, in consequence of which certain physical shortcomings of his were revealed (and marvelled at), is one that borders on burlesque and must have been invented and spread by rather malicious voices.⁸

On a more serious note is the German language recipe of a *laudanum metallicum*, a painkiller,⁹ which Paracelsus is thought to have prescribed for Queen Mary of Hungary against *lues*, that is, syphilis. The novelty and authenticity of this prescription lies in its relative simplicity and small number of ingredients.¹⁰ In the preface of his *Bertheonea*,¹¹ Paracelsus mentioned that he had some Hungarian disciples, but scholars have not been able to identify them or even confirm that they really were from Hungary.¹² He also mentioned that he had a Hungarian friend with a suspiciously German-sounding name, Wolfgang Talhauser, whom he met in Ferrara.¹³

For a long time it was thought that these, often fanciful, stories represented the only link between Paracelsus and Hungary. Hungarian scholars generally held that the influence of the ideas of Paracelsus only percolated down to Hungarian readers and scholars as late as the middle of the seventeenth century.¹⁴ In contrast, the reconstructed library catalogue and private correspondence of the Hungarian Count Boldizsár Batthyány tell a very different story, one of an informal circle linked to Western Hungary, the members of which read and discussed the works of Paracelsus as early as the 1570s, during the second wave of Paracelsianism.

Count Batthyány and his Library

Boldizsár Batthyány (c.1542–1590) was one of the most powerful aristocrats of his time in Hungary. As landlord of Némétújvár (Güssing), Szalónak (Stadtschlaining) and Rohonc (Rechnitz) in Western Hungary, he had to balance between two, the Ottoman and the Habsburg, Empires. As a young man, he spent some of his 'cavalier years' travelling in Austria, Croatia, Slavonia and Western Europe, serving for two years as noble

youth to the French royal couple, Francis II and Mary Stuart. It must have been in the course of his travels that he got acquainted with members of the Paris Protestant intelligentsia, contacts he had kept throughout his entire life. He befriended the Flemish botanist Carolus Clusius (1526–1609), for instance, who designed a small botanic garden for Batthyány, the first of its kind in Hungary, where he cultivated plant rarities and novelties such as the paprika,¹⁵ but among his acquaintances we may also find the Paracelsian physician Josephus Quercetanus and Joachim Camerarius the Younger.

Batthyány spent a considerable amount of time and incomes on the protection of his lands and country against the Ottoman invasion, but his private correspondence reveals that in more peaceful intervals he liked to dedicate himself to reading and practicing natural philosophy. From the 1570s, he started to collect books on a wide array of related subjects—alchemy, alchemical medicine, botany, and the divinatory arts—systematically, with the expert help of Jean Aubry, the acting head of the Wechel printing dynasty.¹⁶ The strikingly up-to-date collection of Batthyány's included contemporary French literature and historiography, especially works dealing with the religious wars, and a large number of Protestant theological works, among which most confessions were represented.

The most novel feature of his collection—especially in the light of what was said about Paracelsus' Hungarian reception—was, however, the quantity, and even more, the quality, of works written in support of, or against, Paracelsian medicine. One can, in fact, outline the reception of Paracelsian thought in the second half of the sixteenth century on the basis of Batthyány's library holdings alone.

Although Boldizsár Batthyány did not have either Perna's two-volume octavo¹⁷ or Huser's eleven-volumes quarto¹⁸ editions of Paracelsus' collected works, in his catalogue we find all the names who, in one way or another, initiated or became involved in, the debate Paracelsian ideas provoked.¹⁹ Apart from a large number of original works edited and translated by exponents of Paracelsian thought, such as Bodenstein, Dorn, or Toxites, we find seminal figures, such as Severinus, whose synthesis was the climax of the "Paracelsian revival,"²⁰ and provoked a new wave of critical literature on the subject. Batthyány's own standpoint in the debates, if he had any, surely cannot be determined from the titles in his collection, since he systematically acquired the works of both the propagators and the critics. The fact that he bought all the volumes of Erastus, all the works published in the course of the Aubert-Du Chesne debate as well as Dessenius' critique of the new medicine is a remarkable

fact. Even more so when we take into account that most of the books he had on natural philosophy in general were first editions, hot off the presses. We also know that he asked one of his friends to buy the Swiss author's works for him in 1574.²¹ Although it would be tempting to ascribe this to Batthyány's particularly high culture and focused interest, we have to recognize the role his intellectual network played in fuelling and fulfilling his interests.

Batthyány's Network

Apart from the acquaintances Boldizsár Batthyány had made in the course of his travels, he kept regular contact with other common-minded people too: a poet from Vienna, an aristocrat from Styria, and two physicians, one from Carniola and another one originating in Italy but working in Hungary. They shared the interest in alchemy and medicine, and were connected by more personal bonds as well. From their correspondence emerges the image of an informal circle with Batthyány at its focal point, whose members exchanged scientific ideas, objects, political opinions, information, and friendly advice alike. Each of them is interesting in his own right, and represents a particular segment of the history of sixteenth-century experimentation.

In the alchemical experiments Batthyány's most faithful friend and partner was the *poeta laureatus* from Vienna, Elias Corvinus.²² Corvinus was the primary buying agent for Batthyány. He not only purchased the instruments, vessels and materials used in the laboratory, but—through his acquaintances—also found laboratory assistants for his patron. He received a salary for his efforts—at least Batthyány agreed to it, but sometimes Corvinus had to remind the Count of a payment which he had not received for years.²³ A letter of Corvinus reveals that he often pursued research in Batthyány's outstanding library concerning problems emerging from the experiments.²⁴ This is supported by the fact that in one of his letters he drew an image which resembles an illustration in Conrad Gesner's *De remediis secretis* which Batthyány is known to have possessed.

To Batthyány's informal circle belonged the fellow-aristocrat, Felician von Herberstein²⁵ from Styria who leased the mines of Nagybánya in the territory of the Kingdom of Hungary.²⁶ In 1585, István Báthory, Prince of Transylvania, put him in charge of writing a report on the state of the Transylvanian mines, which Herberstein completed on 22 December 1585. The report reveals that he carried out a very thorough and professional survey and described the miserable state of the mines urging the Prince to modernise the obsolete implements.²⁷

Apart from Corvinus, Batthyány corresponded about alchemy also with Johannes Homelius, a physician from Pettau. Relatively little is known about Homelius although what is known is worth a closer look.²⁸ He worked as a town physician in Pettau and Marchburg (Ptuj and Maribor, Slovenia).²⁹ There are documents and letters concerning health care in the Steiermarkisches Landesarchiv that show that the town of Graz would also summon him occasionally to attend to an ill magnate in the region.³⁰ He died in 1600 from plague, leaving behind two sons and huge debts.³¹ It has now become clear that he is the same Johannes Homelius who provided Huser with Paracelsica.³² He must have inherited these from his father, also named Johannes, after they were left in his custody probably by Paracelsus himself around 1523–1524, when he stayed at Homelius' house in Pettau.³³

To some extent, the physician Nicolaus Pistolotius (Pistalozzi) also belonged to this informal circle. Although he did not pursue alchemical experiments, he sent many prescriptions to the Count which he or his apothecary prepared at home in a similar way to the alchemical recipes. Pistolotius was the court physician of Ferenc Nádasdy, but according to an earlier letter, he had previously served Batthyány's great-uncle as well.³⁴ He was of Italian origins, from Chiavenna in Lombardy, as suggested by Conrad Gesner's *Liber amicorum*, which he signed on 3 September 1563.³⁵ Some historians claimed that it was Pistolotius who 'converted' the Batthyány family to Protestantism.³⁶ Pistolotius lived in Vienna, but also spent a lot of time at the Batthyány and Nádasdy residences, finally settling in Pozsony (he acquired a house there in 1582).

Exchange of Medical Recipes and Advice

Two of the four regular correspondents of Boldizsár Batthyány, and members of his informal circle, were thus physicians. It is not surprising then to often find recipes and descriptions of cures in their letters. In Batthyány's time only a select few could afford to keep a court physician. Doctors would usually give advice, establish a diagnosis and propose a treatment on the basis of the symptoms patients described in letters. So did Pistolotius and Homelius whose recipes respond to a wide range of medical problems and are indicative of the approach late sixteenth-century medicine had to disease.

Apart from strictly medical issues, sometimes aesthetic ones were also addressed. When we think of the hygiene of our ancestors, there is a tendency to picture certain negligence. However, in one of his letters, Pistolotius, at Batthyány's request, provided him with the description of a

powder, the predecessor of toothpaste, to help Batthyány make his teeth and gums stronger and healthier.³⁷

“I am sending you, my lord, a rather pleasant and easily applicable powder which whitens the teeth and makes them and the gums stronger and more resistant. Rub your teeth with it every day using your finger and you will see that not only it is not unpleasant but is also a highly useful thing.”³⁸
 “You will attain the best result if you heat the powder up in fire until it becomes white, and then you dissolve it twice in half a pint of clear wine, and you rinse your mouth with this wine after each meal, lunch and dinner, two or three times.”³⁹

The recipes were based on traditional *materia medica*, primarily herbal ingredients, but we also encounter wine among the most frequent medications, to cure the body and raise the spirits, even though there is one recorded occasion where Pistalotius tried to persuade Batthyány not to drink so much of it.

“I hope, my lord that you enjoy good health and you mind your regime. If there is no way you renounce the consumption of must, I recommend that you at least drink a dry grape juice rather than a sweet one, because sweet juice may bloat you and block your veins, while the dry one is better against thirst as well.”⁴⁰

In fact, Batthyány seems to have availed himself of this ‘medicine’ frequently, as his employee Gergely Bejczy complains,

“I did not dare to say anything to you today, my lord, because I could see that yesterday’s wine was still in your head . . . next time I visit you, I will teach you how to drink wine properly.”⁴¹

When Jób Kávásy reports that he expects a poor harvest, he comforts himself saying the he could still drink water, since “God created water not only to wash with, but also *etiam propter bibendum* [to drink].”⁴² Wine was considered effective against gout, the widespread disease, as described by Pistalotius in the following way,

“While we were chatting with my lord Bejczy over a good wine, I had to share his view, namely, that there is no better cure for the excruciating gout than a fine, noble wine.”⁴³

The same issue is taken up by Johannes Homelius, who writes, “Against some unpleasant symptoms my lord suffers from I recommend a strict regime and the consumption of a light, noble wine.”⁴⁴

These quotations illustrate that whatever new currents appeared in medicine, the Galenic theory of humours was still the main point of reference in the sixteenth century. If the balance of any of the four humours was upset within the body, it led to illness and the patient experienced symptoms of one of the above four states. Thus, the doctor had to do his best to rid the patient of these surplus fluids. This is why phlebotomy was such a routine operation. In this procedure, the patient—who was feeling weak anyway—was freed of his “surplus” blood by cupping. It appears that Boldizsár Batthyány also submitted himself to this unpleasant treatment. As a follow-up, Homelius suggested the following:

“I beg you not to take too hot a bath after phlebotomy and purgation so that the humours can dry out of your body, and do not stay longer in the bath than an hour and a half, so your blood does not heat up too much because the fluctuation of the humours feeds the piercing poignancy of gout. Hot baths are, furthermore, enemies of both Venus and Bacchus but I trust your judgement, my lord, which will direct you in everything.”⁴⁵

Ferenc, Boldizsár Batthyány’s son suffered from delicate health. Pistalotius explained the boy’s morning headaches within the framework of humoral pathology:

“My young lord Ferenc, who complains of morning headaches, most probably suffers from an excess of black bile, a humour which generates in his stomach and the fumes of which ascend from there to cause pain and dizziness in the head.”⁴⁶

Elias Corvinus, on the other hand, gave a detailed account of a marvellous elixir which he had acquired from the Paduan physician Giacomo Antonio Cortusio,⁴⁷ and which was effective not only against epileptic symptoms but also neutralised poisons in the body.

“I have invited to my house the one Sepacher I told you about who claimed various things about the elixir of the Paduan Cortusius. Upon my constant instigation he promised to prepare it in front of me with his own hands. When he was done with it, he said the elixir was an antidote to all sorts of poisons and even cured lethal diseases. In my presence he took a couple of drops and swallowed them so that I should not be suspicious, and he swore by the saints that the elixir was given him by the Prince of Brandenburg himself in the presence of Doctor Luther (the son of Martin Luther) and it had presumably saved him from a poisoning.”⁴⁸

However, it was not only educated physicians who shared medical advice with their correspondents. In an age when health care was not yet

institutionalised, one had to resolve his health problems and of those of his family according to his own capabilities and convictions. The correspondence of Boldizsár Batthyány is a rich treasury of such instances.⁴⁹ It becomes clear from these letters that good doctors were difficult to find and not even the wealthiest individuals could always afford a court physician. They would share the few available doctors, or more often, advise one another or send medicine based on the symptoms described in letters.⁵⁰

Even Batthyány offered medical advice freely, although the outcome of his interventions were not always positive, as his friend Bejczy complains,

“Because of your advice I have ended up, my lord, like the builders of the tower of Babylon; when they asked for lime, they were given bricks, when they asked for bricks, they were given lime: I asked for a medicine for arena and you sent me one for gout . . . I only know that my stomach still aches from your medicine.”⁵¹

Batthyány's other ‘patients’ were luckier: Kristóf Zrínyi was full of gratitude for the medicine Batthyány sent him for kidney stones.⁵² At times the poet Corvinus gave advice for the morning dizziness Batthyány's wife Dorica experienced, although he consulted his physician friends on the matter beforehand.⁵³ Apart from the customary herbal ingredients, in these recipes there was an increased presence of minerals and metallic components, which—though propagated also by medieval authors—may reflect the influence of new, primarily Paracelsian, tendencies in medicine. Such a familiarity, however, does not mean that they had drastically broken with the ancient tradition of humoral pathology. This tradition, although vehemently criticised and challenged by Paracelsus, continued to be widely practiced. Apparently, it was not necessarily a contradiction for sixteenth-century physicians sympathetic to Paracelsian ideas to operate within two, often conflicting, systems.

A Miniature Universe: Laboratory, Instruments, and Operations

It becomes clear that Boldizsár Batthyány was expected to prepare the recipes his physician friends sent him, “at home.” This implies that there were people in his household who were familiar with the materials and basic alchemical processes, and had access to implements. It is not a coincidence that among the new sites of knowledge production, the aristocratic court stands out because of its openness towards novelty and the financial prerequisites of experimentation. In documents pertaining to many late sixteenth-century aristocratic households—such as inventories,

contracts, invoices, and letters—we find references to alchemical experiments, and the correspondence of Boldizsár Batthyány also provides an insight into the ways the experiments were pursued in a ‘lay,’ non-academic, private ambience. On the basis of the letters exchanged between the members of Batthyány’s informal circle, we will look into how these particular individuals put their readings into practice, what processes and materials they were familiar with, how they organised and harmonised their activities and shared their experiences.

It was the laboratory that connected various practitioners of the alchemical arts: transmutational alchemists, distillers, apothecaries, physicians, metallurgists, and other craftsmen. In the Middle Ages the word ‘laboratory’ was rarely used and mostly in the sense of an *officina*.⁵⁴ The laboratory, as a place for scientific inquiry, was an ‘invention’ from the second half of the sixteenth century. In Boldizsár Batthyány’s age, thus, we cannot yet speak of laboratories as spaces purposefully built for experimental activity, in which implements are arranged systematically, following a well-devised organising principle. We also should not give too much credit to contemporary depictions of alchemical laboratories, because such representations—popular especially among Dutch and Flemish artists from the seventeenth century onwards—were meant to entertain, rather than be realistically illustrate what a laboratory looked like at their time.⁵⁵ Illustrations in contemporary books on alchemy are also to be handled with care—they are often inexact, and simplifying.⁵⁶

Archaeology, however, in the past decades, has helped us picture more accurately the material culture of alchemical experimentation. In 1980, in the Austrian Oberstockstall at Kirchberg am Wagram (half-way between Krems and Tulln), an entire alchemical laboratory was discovered beneath a chapel where it presumably ended up as the result of an earthquake in the last decade of the sixteenth century.⁵⁷ Research concludes that these objects derive from a period between 1560 and 1610 when the families von Trenbach and, later, the Fuggers were the landowners of the small town. It was well known that Victor August Fugger, for instance, was extremely interested in alchemy, and he was one of the dedicatees of a treatise by the Paracelsist Michael Toxites.⁵⁸

Apart from the well-known examples of the laboratory of Tycho Brahe⁵⁹ and the ‘house of chemistry’ designed by Andreas Libavius,⁶⁰ we only have scattered information on the first laboratories, such as the written instructions Count Wolfgang II of Hohenlohe gave for the building of his laboratory in Schloss Weikersheim,⁶¹ the diary of laboratory processes kept by Moritz of Hessen-Kassel from 1604,⁶² and the archaeological findings recent excavations uncovered from Kapfenberg in

Austria.⁶³ Still, these laboratories became widespread only in the second half of the seventeenth century. This is when the need to test hypotheses under controlled circumstances arose, and when the first scientific societies and the first faculties of chemistry (*chymiatría*) (1609, Marburg, chair Johannes Hartmann, appointed by his patron Moritz of Hessen-Kassel) were established.⁶⁴ Under the term ‘laboratory’ at that time, then, we should think of a set of implements gathered in any suitable space possible, from monasteries, chapels and hospitals to households, in which, again, a variety of rooms—kitchens, root cellars—were put to use.

The members of Boldizsár Batthyány’s informal circle rarely had the chance to meet in person; they mostly pursued their experiments individually, and discussed the conceptual and practical problems in letters. Hence, it can be assumed that they each had some kind of laboratory. It is known for sure that Homelius finished his laboratory in 1587,⁶⁵ while Herberstein, as a mine-owner, had access to a wide range of implements. We do not know where Batthyány’s laboratory was located within his household, as there were no archaeological excavations made in his castles, but from one of Corvinus’ letters we learn that he decided to have his own furnace built. The poet advised him to be cautious and have it built in the castle, rather than in the monastery, to avoid gossip. He also recommended a round furnace since the processes of *digestio* and *putrefactio* required a constant flame, and it was also Corvinus’ idea that they should ask Count Herberstein because he had a good mason, knowledgeable in building such furnaces.⁶⁶

Since alchemical experimentation and laboratory work in general were not yet large-scale phenomena, the acquisition of these instruments required both good connections and solid pecuniary means. Corvinus, the primary ‘buying agent’ for Batthyány, usually acquired the instruments in Vienna, and he once complained that his old potter had died and could hardly get along with the younger ones working in the city because they were mendacious and arrogant.⁶⁷ He bought the smaller retorts, mortars, gold and honey from a man called Rasperger.⁶⁸ Batthyány sometimes supplied his friends with equipment as well. In 1587 Homelius asked him for an iron mortar and he had his blacksmith forge him one.⁶⁹

On top of the pricy equipment, an early modern practitioner of the alchemical arts also had to acquire a wide range of raw material for the experiments: ores, precious metals such as silver and gold, quicksilver, sulphur, or even more exotic ingredients, such as the insect Spanish-fly (*cantharidum*) used in medicines,⁷⁰ and less costly ones like coal and wood to keep the fire going in the furnace for days if necessary, or animal dung from the manure-heap—this one at least easily obtainable. Consequently,

an alchemist needed a widespread network of connections to have glassware delivered from Venice, earthenware vessels from Germany, ores from various mines, and able craftsmen who could forge the special instruments needed for the alchemical procedures. They seem to have experimented with a rather wide range of materials, and animal testing was not unusual in this period. In one of his letters Corvinus writes,

“I bought six pounds of euphorbia but I advise you, my lord, to take care because it has an acrid smoke which, among other things, causes sneezing and burns the eye. I also bought six pounds of Spanish-fly so we can do our experiment on those animals.”⁷¹

Later, however, he reports that “I tasted that fiery thing, the Spanish-fly which is so stinky that one’s soul abhors from it.”⁷²

For the acquisition of raw materials, Batthyány and his friends again left no stone unturned. At one point Corvinus reported to the Count of a possibility to order red ores from his homeland, the mining area of Joachimsthal, and asked Batthyány if he wanted some, because then they could carry out some experiments with them.⁷³ On another occasion, he sent some white marble,⁷⁴ while Homelius searched for hard red marble for him.⁷⁵ Batthyány himself owned iron and copper mines in Vas County,⁷⁶ and produced saltpetre as well, since various people repeatedly asked him for it.⁷⁷ The production of saltpetre, this crucial ingredient of gunpowder, was only becoming more widespread at this time, as the recipe for creating nitre-beds artificially remained a trade secret of German producers for long.⁷⁸

When necessary, they even tried calling forth metals from the ground. In one of his letters, Corvinus enthusiastically told Batthyány that a man with a divining rod (*virgula divina*) found a little chest under the ground with a couple of silver vessels inside among some less valuable things. According to him, anyone could make such a divining rod from hazel withe under one condition that the hazel withe be cut when the Sun entered the sign of Aries. After this detail of astral magic, Corvinus continues by saying that “we can try the divining rod at those graves and in other places around the castle.”⁷⁹ Unfortunately, our curiosity must remain unsatisfied since there was no further indication in Corvinus’ letters concerning the graves around Némethújvár (or perhaps Szalónak), in which they could have hunted for treasures. Interestingly, we may find divining rods also in the *Kunstammer* of Elector August of Saxony.⁸⁰

One of the Batthyány’s friends and correspondents, Miklós Pálffy, vice-captain of Komárom, in 1583 married a Fugger-girl, Maria, from the Kirchberg-branch of the family (the one connected to the Oberstockstall

laboratory).⁸¹ There is an intriguing letter in the Pálffy family archives in Pozsony, written by Batthyány to Pálffy in the castle of Vöröskő.⁸² The letter again testifies to the Count's expertise in alchemy, and especially to his knowledge of the various qualities of metals.

"I understand that in Vöröskő Castle you have found some copper balls. Well, the saying goes *nihil fit sine causa* [nothing happens without cause]. There must be a reason for them being there. When the Fugger lords owned the mines, it is true that they were casting cannons and cannon balls; nevertheless, copper is quite a *debilis materia* [weak material] for the destruction of fortress walls. So my foolish advice is that you have one of these balls assayed for silver, since in the mines one often finds silver alloyed with copper."⁸³

Another time it was Ferenc Nádasdy who asked Batthyány's expert opinion about the copper he found to know if it was of a good quality.⁸⁴

All these materials, vessels, and instruments were required for various elementary alchemical procedures: Batthyány and his friends dealt with distillation, sublimation, putrefaction, resuscitation, and other processes. Many of their operations involved vegetable salts, extracted, for instance, from the bitter arum plant (*radix Aronis*, cuckoopint) and red pepper (*piper Turcicum*). Corvinus claims that these two plants are especially good to extract salts—strong solvents—from, and are useful in the preparation of *aqua fortis*, an even more powerful solvent. *Aqua fortis* was central to their operations: Corvinus urges Batthyány to prepare it as soon as possible, because they cannot proceed without it. Its uses were many, from medicines to the making of the *lapis philosophorum*. He adds that if vegetable salts do not fulfil their expectations, they should start experimenting with mineral salts instead.

Naturally, Batthyány and his friends also made inquiries into what the philosophers' stone might really be. Corvinus consulted various works of Paracelsus on the subject,⁸⁵ while in one of his letters Homelius claimed to have previously described how it was made (this description unfortunately does not survive).⁸⁶ Later he complained that the mint master of Graz, who himself was in possession of the secret recipe, had blabbed out the precious information, which the physician disapproved of, paraphrasing the words of the Evangelist Matthew: "The secrets ought not be revealed, neither ought the pearls be trampled upon so. This way more stones will be found in the gall bladders of oxen."⁸⁷

Laboratory Assistants

The image of the alchemist as a solitary figure, experimenting alone in his workshop, was still popular and it remained until modern times. In reality, alchemical activity was increasingly turning into the collaboration of many people. It would have been impossible to pursue the complicated experiments alone. Most of the alchemical operations were so complex that they lasted for weeks, sometimes even months and required the cooperation of a handful of assistants. Not to mention the readings these procedures necessitated: we may assume that certain experiments were preceded by weeks of preparation and reading of alchemical authors. Therefore an experimenting nobleman needed an array of help: learned correspondents to discuss the often obscure philosophical formulations of the procedures to follow in books, assistants to cope with the tedious work of keeping the flame in the furnaces, shove charcoal into them, pulverise ores, clean utensils and vessels, and he needed the skill and technical expertise of laboratory assistants, people familiar with the chemical processes, such as distillers and apothecaries.

Since neither Batthyány nor Corvinus possessed the necessary education or training, assistants with an alchemical expertise were indispensable for their experiments. At one point the poet referred a young candidate he had found to Batthyány and proposed taking him to Pozsony where the Count could interview him.⁸⁸ In a letter from 1572, Herberstein expressed his worries that Batthyány laid too much trust in his new assistant; he warned Boldizsár that it would be unfortunate if the assistant “wanted to go too far” just like alchemists tended to do.⁸⁹ A couple of years afterwards, in 1574, Herberstein wrote about a pharmacist called Leopold from Vienna.⁹⁰ In half a year’s time, Corvinus mentioned that he would send another young man from Styria, or his own goldsmith, to help in the laboratory.⁹¹ They received another assistant from Count Herberstein in the end, but in 1582, Corvinus complained that,

“I haven’t achieved anything for the last three months, because our assistant almost didn’t work at all, I guess he completely gave himself up to sleeping and drinking.”⁹²

Within a year, he was again looking for a laboratory assistant, but it was only in 1587 that he mentioned a young boy named Hans who worked for Batthyány in Szalónak. The father of this Hans had just been imprisoned in Sopron (Ödenburg) for firing off a rusty catapult which exploded, killing three men around him. Corvinus was trying to persuade Batthyány to intervene on behalf of this man because he was an expert in the

processes of *resuscitatio* and *sublimatio* and thus, could be a great help to the Count.⁹³

Homelius could take pride in his laboratory assistant, at least for a short while. In 1587, he reported to Batthyány that Johannes, a committed alchemist and son of the famous Ilfeld humanist Michael Neander, was lodging with him.⁹⁴ He should have known better than advertise his precious finding to Batthyány, because within a couple of months' time, we find the young Hans as court pharmacist in Némethújvár.⁹⁵ For a comparison, Duke Frederick of Württemberg in Stuttgart employed ten laboratory assistants in one single year, and he consumed a total of thirty-three over fifteen years.⁹⁶ From all these details it becomes apparent how hard it must have been to find an able and sober laboratory assistant, and also how determined Batthyány and Corvinus must have been, since, in spite of the various difficulties, they pursued their experiments for decades.

We have no record of Batthyány's wife Dorica assisting in these activities, although we regularly find the women of the noble household distilling essences for medication, and that John Dee's wife, Jane, for instance, played an indispensable role in her husband's scientific pursuits,⁹⁷ just like Anna, the wife of Elector August of Saxony⁹⁸ or Magdalena, the spouse of Wolfgang II of Hohenlohe,⁹⁹ to mention just a few.

Conclusions: Some Early Readers of Paracelsus in Pannonia

When talking about laboratory operations, the members of Batthyány's informal circle prefer to use the expression *res chymicae*, and instead of alchemists they usually talk about *philosophi* or *chymistae*. Taking into account that Herberstein even warns Batthyány "not to go too far as alchemists tended to do," it would be easy to assume that the choice of words reflects a conscious distance from transmutational alchemy. At the same time, one of their main preoccupations is how to make the philosopher's stone, the agent of transmutation, which suggests that in their wording they only follow a contemporary trend (Tycho Brahe also preferred the expressions *res spagyrica* or *pyronomica*) but do not detest alchemy in general.

Their correspondence contains many references to alchemical authors. Corvinus appears to have been acquainted with the work of Rupescissa, Geber, Bernardus Trevisanus, Arnald of Villanova, Morienus, Augurellus and pseudo-Thomas Aquinas, while Homelius mentions (pseudo-)Lull's

Clavicula, a work closely connected with the *Testamentum*, also attributed to Lull. Paracelsus and his work was not only known by all of them (except for Pistorius who never refers to him), but also held in high esteem. When he encounters difficulties in his experiments, Corvinus regularly turns to the Swiss author's writings to find a solution, and he always speaks of Paracelsus with appreciation, never with scorn or criticism.¹⁰⁰ He refers to the *Archidoxis* twice in his letters and compares it with another one of the works attributed to Paracelsus, the *Metamorphosis*—we find both in Batthyány's library—while he admits that it took him a long time to make sense of one of his sentences on the alchemical wedding. Homelius and Herberstein reveal their acquaintance with the Paracelsian theory of the *tria principia*, and the physician's recipe of a coral tincture (*tinctura Corallorum*) probably also derives from the *Archidoxis*.¹⁰¹ Herberstein welcomes Paracelsian remedies as superior to “apothekerische ertzneien.”¹⁰² Many of these references occur in the beginning of the 1570s, shortly after Severinus' *Idea medicinae* was published.

The interest of Batthyány and his circle in Paracelsus, however, was neither exclusive—as shown by references to many other alchemical authors—nor does it designate the beginnings of a Paracelsian movement in Western Hungary and the surrounding lands. In fact, we cannot talk about Paracelsianism proper in early modern Hungary. Instead of original works inspired by his ideas, it is through library collections primarily that we can estimate the extent to which Paracelsus and his thought were known. The familiarity of Batthyány and his correspondents with Paracelsian thought at such an early time is nevertheless remarkable, and shows that the second wave of Paracelsianism spread swiftly, reaching beyond Western Europe. Boldizsár Batthyány may well be only one in the line of lesser-known patron-practitioners, and further research in Central European archives will hopefully present us with new examples and deepen our understanding of the mechanisms of communication and cultural exchange in the early modern period.

Notes

* This article is a summary of the related chapters of my monograph *The Sword and the Crucible. Count Boldizsár Batthyány and Natural Philosophy in Sixteenth-Century Hungary* (Newcastle upon Tyne: Cambridge Scholars Publishing, 2009).

¹ Paracelsus, *Seven Defensiones*, in *Paracelsus: Four Treatises*, edited by H. E. Sigerist (Baltimore: Johns Hopkins Press, 1941), 26.

² István Vámosy, *Adatok a gyógyászat történetéhez Pozsonyban* (Data Concerning the History of Medicine in Pozsony) (Pozsony: Pozsony szabad kir. Város közönsége, 1901), 21.

³ In one of her recipes, the alchemist Anna Maria Zieglerin—later executed by Julius von Braunschweig for fraud—explicitly asks for ‘Hungarian gold,’ while a certain Honauer, when offering his transmutational services to Vilém Rožmberk, claims to be able to transmute one pound of iron into eight pounds of pure gold, and even more if the iron comes from Hungary. See Tara Nummedal, *Alchemy and Authority in the Holy Roman Empire* (Chicago: The University of Chicago Press, 2007), 115 and 90, respectively.

⁴ See *Paracelsus, Sämtliche Werke. Nach der 10bändigen Huserschen Gesamtausgabe (1589–1591) zum Erstenmal in neuzeitliches Deutsch übersetzt* (Jena: Gustav Fischer, 1928–32) (4 vols.), vol. 3 (1930). Contemporaries thought that if this was true, then the same water could somehow be used to transmute silver into gold too. The legend was so widely known that barrels and barrels of this water were shipped abroad from these mines. Sigmund Herberstein, for instance, also mentioned “waters rich in vitriol,” see *Johannes Tichtel’s Tagebuch 1477 bis 1495. Sigmunds von Herberstein Selbstbiographie 1486 bis 1553. Johannes Cuspinian’s Tagebuch 1502 bis 1527 und Georg Kirchmair’s Denkwürdigkeiten 1519 bis 1553*, edited by Th. G. von Karajan, *Fontes Rerum Austriacarum I* (Vienna: Kaiserl. Königl. Hof- und Staatsdruckerei, 1855), 382. In reality, these waters were rich in copper sulfate. Consequently, when a bar of iron was placed in the water, copper would settle on its surface which made it look like pure copper. See Béla Borsody-Bevilaqua, *A magyar serfőzés története* (History of Hungarian Brewery) (Budapest: n. p., 1931) (2 vols.), vol. 2, 1104–1105; and Sándor Puder, *Paracelsus. Paracelsus magyar vonatkozásaival* (Paracelsus. With his Hungarian Relations) (Budapest: Vajda János Társaság, 1942), 35.

⁵ Puder, *Paracelsus*, 36.

⁶ This legend was made widely popular by the humanists of King Matthias Corvinus in the fifteenth century, Pietro Ransano and Galeotto Marzio. See Béla Tóth, “Az arany venyige” (The Golden Grape) in *Curiosa Hungarica. Magyar ritkaságok* (Hungarian Rarities) (Budapest: Atheneum, 1907, 2nd amplified edition), 183. Only in the eighteenth century does anyone deny the validity of this myth by showing that the gold taken from these grapes did not pass the assays. In reality, these golden drops on the surface of the grapes were empty cocoons of a certain species of insect, *Gonocerus acutangulatus*, which are as yellow as amber with reticulated surfaces that cause interference with light, making them appear to glitter. Other explanations suggest that the golden grapes travelers saw could also have been archaeological finds, extremely thin golden filaments deriving from the innumerable Celtic ornaments hidden for centuries in the ground that spiraled around the growing plants. *Ibid.*, 182–194.

⁷ *De pestilientia* in Theophrastus Paracelsus, *Werke*, edited by Will-Erich Peuckert (Basel–Stuttgart: Schwabe & Co. Verlag, 1968), Band V, 203.

⁸ In a presumably apocryphal text, Paracelsus reported that once, while he was passing through Hungary on his way to Italy, a foraging troop of Tartars captured

him. They made him take off his clothes and saw that he was deprived of his genitals. The Tartars were so amused by this phenomenon that they gave him his clothes back, tied his hands and brought him to the Great Khan, in front of whom he again had to show himself naked. The Khan was completely astonished by this sight, because “die Verschnittenen bei ihnen nicht verschnitten werden.” *Hermetisches Museum* (Reval, 1782), vol. 1, Vollständiges Wunsch-Hütlein. 122.

1. Quoted in György Endre Szőnyi, “The Occult Sciences in Early Modern Hungary in a Central European Context,” in *The Role of Magic in the Past*, edited by Blanka Szeghyová (Bratislava: Pro Historia, 2005), 37.

⁹ Hugh Trevor-Roper, “The Paracelsian Movement,” in *Renaissance Essays* (London: Fontana, 1985, 1st edition: 1961), 158.

¹⁰ László Szathmáry, “Mária királyné és Paracelsus” (Queen Mary and Paracelsus), *A Magyar Gyógyszerésztudományi Társaság Értesítője* 8, no. 2 (1932), 274–282.

¹¹ Theophrastus Paracelsus, *Werke*, vol. 1, 18.

¹² László Szathmáry, “A magyar iatrokémikusok” (The Hungarian Iatrochemists) in *Régi magyar vegytudorok* (Old Hungarian Chemists) (Piliscsaba–Sopron–Várpalota: Magyar Tudománytörténeti Intézet–NYME–Magyar Vegyészeti Múzeum, 2003), 15.

¹³ Szőnyi, “The Occult Sciences in Early Modern Hungary,” 37.

¹⁴ Szathmáry, “A magyar iatrokémikusok,” 15.

Presently, we have no information about other sixteenth-century readers in the Kingdom of Hungary who not only collected books related to Paracelsus, but demonstrably read and reflected upon his ideas. According to György Elekes (“Paracelsus és a paracelsismus sorsa Magyarországon” (History of Paracelsus and Paracelsianism in Hungary), *Orvostudományi Közlemények* 3, no. 2 (1942), 39), Petrus Lascovius Monedulatus also worked in the Paracelsian spirit, as did another renowned physician, Gergely Frankovich (his ‘serapium ointment’ has Paracelsian overtones) (Szőnyi, “The Occult Sciences in Early Modern Hungary,” 40) as well as János Balsaráti Vitus, Máté Dresser, János György Szepesi Macer, and Bertalan Carrichter. At the same time, there were opponents of Paracelsus’ medical system among the sixteenth-century intelligentsia such as the Imperial physician and historian, Joannes Sambucus or the humanist Andreas Dudith (Elekes, *Paracelsus*, 40; and Lavoslav Glesinger, “Der Humanist Andreas Dudith im Kreise der Antiparacelsisten,” *Salzburger Beiträge zur Paracelsusforschung* 7 (1967): 3–12). Only in the seventeenth century do we again find traces of Paracelsianism in Hungary. A treatise from 1634 on the plague by Máté Csanaki is worth mentioning. The author claimed that the disease could be cured using Paracelsian medicine, while in 1646 Johann Puecher, a Hungarian doctor of Saxon origin, praised Paracelsus together with van Helmont (Szőnyi, “The Occult Sciences in Early Modern Hungary,” 40). Many Hungarian students wrote their theses on occult-hermetic topics in Wittenberg, under the Silesian professor, Daniel Sennert (Wolfgang U. Eckart, “Antiparacelsismus, okkulte Qualitäten und medizinisch-wissenschaftliches Erkennen im Werk Daniel Sennerts (1572–1637),” in *Die okkulten Wissenschaften in der Renaissance*, edited by August Buck (Wiesbaden: Harrassowitz, 1992), 139–157).

¹⁵ For more on Batthyány's life and interests in an international context see, Bobory, *The Sword and the Crucible*.

¹⁶ Robert J. W. Evans, "The Wechel Presses. Humanism and Calvinism in Central Europe 1572–1627," *Past and Present* (1975), suppl. 2 (Oxford: The Past and Present Society, 1975).

¹⁷ It was translated into Latin by Georg Forberger. On Perna, see Antonio Rotondò, *Studi e ricerche di storia ereticale italiana del Cinquecento* (Turin: Edizioni Giappichelli, 1974); and Leandro Perini, *La vita e i tempi di Pietro Perna*, Studi e testi del rinascimento europeo 17 (Rome: Edizioni di Storia e Letteratura, 2002).

¹⁸ These were published between 1589 and 1591 in Basle by Conrad von Waldkirch, son-in-law and legal successor of Pietro Perna. This edition is not complete either. Waldkirch was unwilling to include Paracelsus' surgical works, since he published some earlier and still had unsold copies of them in stock. See Didier Kahn, *Alchimie et Paracelsisme en France à la fin de la Renaissance (1567–1625)* (Geneva: Droz, 2007), 99.

¹⁹ For a detailed description of these items see Bobory, *The Sword and the Crucible*, 55–60.

²⁰ The expression is first used by Lynn Thorndike, *A History of Magic and Experimental Science during the First Thirteen Centuries of Our Era* (8 vols.) (New York: Macmillan&Co., 1923–1958), vol. 5, 617. On Severinus see, Jole Shackelford, *A Philosophical Path for Paracelsian Medicine: The Ideas, Intellectual Context, and Influence of Petrus Severinus (1540/2–1602)* (Copenhagen: Museum Tusculanum Press, 2004).

²¹ Elias Corvinus to Boldizsár Batthyány on 6 December 1574 from Vienna. National Archives of Hungary (abbreviated as MOL), P 1314, private correspondence of the Batthyány family. See *Letters on Natural Philosophy from the Correspondence of Boldizsár Batthyány*, edited by Dóra Bobory (Budapest: Habsburg Történeti Intézet, forthcoming in 2011). All letters quoted in this article are to be found under the signature MOL P 1314.

²² The only full biography ever written about Elias Corvinus is by Oszkár Sárkány, in his introduction to Corvinus' poem, the *Joannis Hunnadiae res bellicae contra Turcas. Carmen epicum*, edited by Oszkár Sárkány, *Bibliotheca scriptorum medii recentisque aevorum* (Leipzig: n. p., 1937). On his Hungarian connection see, Szabolcs Ö. Barlay, "Elias Corvinus és magyarországi barátai" (Elias Corvinus and his Hungarian Friends), *Magyar Könyvszemle* 93 (1977), 345–353.

²³ Elias Corvinus to Boldizsár Batthyány from Vienna on 28 November 1584.

²⁴ Corvinus to Batthyány from Vienna on 13 September 1574.

²⁵ On Herberstein see the funeral orations for Felician and his son Raymund, found in the manuscript collection of the Hungarian Academy of Sciences (David Reuss, *Zwo Leich und Trostpredigten* . . . (Leipzig: Beyer, 1595). On the basis of the funeral oration, Felician Herberstein was born in 1540 and died in 1590, just like Boldizsár Batthyány.

²⁶ Gusztáv Wenzel, *Magyarország bányászatának kritikai története* (Critical History of Mining in Hungary) (Budapest: MTA Könyvkiadó Hivatala, 1880), 231; Antal Szirmay, *Szathmár vármegye fekvése, története és polgári esmérte* (The

Geographical Position, History and Inhabitants of Szathmár County) (Buda: published by the author, 1809), 226, 228–229, 249; Sándor Szilágyi, *Erdélyi országgyűlési emlékek* (Records from the Transylvanian Diets) (3 vols.) (Budapest: MTA Könyvkiadó Hivatala, 1875–1877), vol. 3, 67, 77; Lajos Huszár, *Habsburg-házi királyok pénzei 1526–1657* (The Coins of Rulers from the Habsburg House), *Corpus Nummorum Hungariae. Magyar egyetemes éremtár III* (Budapest: Akadémiai Kiadó, 1975), 58; Endre Veress, *Báthory István király levélváltása az erdélyi kormánnyal (1581–1585)* (The Correspondence of King István Báthory with the Transylvanian Government, 1581–1585). Budapest: MTA, 1948).

²⁷ Endre Veress, *Documente privitoare la istoria Ardealului, Moldavei și Țării-Românești*. (Documents regarding the History of Transylvania, Moldavia and Wallachia) (Bucharest: n. p., 1931), vol. 3, 58–64; and Wenzel, *Magyarország bányászatának kritikai története*, 231.

²⁸ He is not the same person as the astronomer Johannes Homelius from Leipzig (originally Johann Hommel (1518–1562). See *Allgemeine Deutsche Biographie* (Leipzig: Duncker and Humblot, 1881), vol. 13.

²⁹ *Zbornik splošne bolnišnice dr. Jožeta Potrča Ptuj 1874–2004* (Miscellany of the General Hospital “Dr Jože Potrč” in Ptuj, 1874–2004) (Ptuj: Ptujška tiskarna, 2004), 120–121.

³⁰ Sanität, Laa. Antiquum, Gruppe IX, Karton 1, Heft 1–2, 4–5; K.2, H.7., Steiermärkisches Landesarchiv, Graz.

³¹ *Zbornik splošne bolnišnice dr. Jožeta Potrča Ptuj 1874–2004*, 120–121.

³² Joachim Telle, “Johann Huser in seinen Briefen. Zum schlesischen Paracelsismus im 16. Jahrhundert,” in *Parerga Paracelsica. Paracelsus in Vergangenheit und Gegenwart*, 210; and *Paracelsus*, edited by Karl Sudhoff, vol. 1 (1929), xiv. Homelius presumably inherited these Paracelsica from his father, also named Johannes, after they were left in his custody probably by Paracelsus himself around 1523–1524, when he stayed at Homelius’ house in Pettau.

On the stay of Paracelsus in the present day territory of Slovenia see, Aleksander Poznik, “Osnovne Paracelsusove teze in njegovo bivanje v Ptuj” (Paracelsus’ Basic Theses and his Stay at Ptuj), *Zbornik za zgodovino naravoslovja in tehnike* 8 (1985): 115–125; and Lavoslav Glesinger, “Paracelsus in Slovenija” (Paracelsus and Slovenia), *Zavod za zgodovino medicine medicinske fakultete v Zagrebu* 27 (1958), 440–445. Huser refers to Homelius in his preface as someone he received a Paracelsus manuscript from. See *Corpus Paracelsisticum*, edited by Wilhelm Kühlmann and Joachim Telle, vol. 2 (Tübingen: Max Niemeyer Verlag, 2004), 413.

³³ Sudhoff dates the *Opus Paramirum* to 1530 which questions whether Homelius could have come into possession of this manuscript around 1523–24.

³⁴ Nicolaus Pistorius to Boldizsár Batthyány from Óvár on 20 April 1569.

³⁵ Richard Durling, “Conrad Gesner’s *Liber amicorum*,” *Gesnerus* 22, no. 3/4 (1965), 143.

³⁶ “Boldizsár Batthyány was primarily won for Luther by his widow mother, and the physicians, Pistorius, a native of Hungary, and the Viennese Corvinus.” See, Sándor Payr, *A dunántúli evangélikus egyházkerület története* (History of the

Transdanubian Evangelic Diocese) (Sopron: n. p., 1924), vol. 1, 190–191. He quotes the letter of György Liszthi, Bishop of Győr in which the Bishop was pleading Batthyány to abandon that evil Písalotius. See also Sándor Takáts, “Műveltségtörténeti közlemények III. A magyar patika” (Cultural Historical Proceedings III. The Hungarian Pharmacy), *Századok* 41 (1907), 338.

³⁷ Recipes for whitening the teeth and treating gums may also be found in Alessio Piemontese, *De' secreti del reverendo donno Alessio Piemontese . . . seconda editione* (Lucca: Busdrago, 1557), 141. It was first published in 1555 in Venice.

³⁸ Písalotius to Batthyány from Vienna on 23 May 1573.

³⁹ Písalotius to Batthyány from Vienna on 15 August 1574.

⁴⁰ Písalotius to Batthyány from Vienna on 26 September 1575.

⁴¹ Gergely Bejczy to Boldizsár Batthyány from Szombathely on 9 December 1571.

⁴² Jób Kávásy to Boldizsár Batthyány from Nemetújvár on 18 September 1576.

⁴³ Písalotius to Batthyány from Güns (Kőszeg) on 5 December 1575.

⁴⁴ Johannes Homelius to Boldizsár Batthyány from Marchburg on 6 March 1587.

⁴⁵ Homelius to Batthyány from Pettau on 18 April 1587.

⁴⁶ Písalotius to Batthyány from Pozsony on 23 October 1585.

⁴⁷ Giacomo Antonio Cortusio (1513–1603) was a Paduan patrician, a passionate collector of naturalia, and correspondent of many famous naturalists, such as Mattioli, Aldrovandi, Clusius, Dodoens, and Camerarius. He built destillatory rooms next to the botanic gardens in Padua. See Marco Ferrari, “Alcune vie di diffusione in Italia di idee e di testi di Paracelso,” in *Scienze. Credenze occulte. Livelli di cultura*, edited by Paola Zambelli (Florence: Olschki, 1982), 24; and Sara Ferri, “Il Dioscoride, i Discorsi, i Commentari: gli amici e i nemici,” in *Pietro Andrea Mattioli. Siena 1501–Trento 1578. La vita e le opere con l'identificazione delle piante*, edited by Sara Ferri (Perugia: Quattroemme, 1997), 39–40.

⁴⁸ Elias Corvinus to Boldizsár Batthyány from Vienna on 14 July 1575.

⁴⁹ Sándor Takáts, “Orvosságtudakozás és orvoslás a hódoltság korában” (Inquiries on Medicine and Healing in the Period of the Ottoman Conquest), in *Rajzok a török világból* (Sketches from the Turkish Period) (Budapest: MTA, 1917).

⁵⁰ On the basis of largely seventeenth-century sources, see, ‘*Im küttem én orvosságot...*’ *Lobkowitz Poppel Éva levelezése, 1622–1640* (‘I Have thus Sent you Medication...’ The Correspondence of Éva Lobkowitz Poppel, 1622–1640), edited by Katalin Kincses (Budapest: Eötvös Loránd Tudományegyetem, 1993).

⁵¹ Gergely Bejczy to Boldizsár Batthyány from Szombathely on 27 September 1575.

⁵² Kristóf Zrínyi to Boldizsár Batthyány from Vörösvár on 30 June 1573.

⁵³ Elias Corvinus to Boldizsár Batthyány from Vienna on 27 January 1572.

⁵⁴ Owen Hannaway, “Laboratory Design and the Aim of Science: Andreas Libavius versus Tycho Brahe,” *Isis* 77 (1986), no. 4, 585.

⁵⁵ C. R. Hill, “The Iconography of the Laboratory,” *Ambix* 22 (1975), 102–110.

⁵⁶ Robert G. W. Anderson, “The Archaeology of Chemistry,” in *Instruments and Experimentation in the History of Chemistry*, edited by Frederic L. Holmes and Trevor H. Leveré (Cambridge, MA: The MIT Press, 2000), 5.

⁵⁷ Sigrid von Osten, "Das Alchemistenlaboratorium Oberstockstall. Ein Fundkomplex des 16. Jahrhunderts aus Niederösterreich," Ph.D. dissertation (Universität Wien, 1992); and Rudolf Werner Soukup and Helmut Mayer, *Alchemistisches Gold, Paracelsistische Pharmaka. Laboratoriumstechnik im 16. Jahrhundert. Chemiegeschichtliche und archäometrische Untersuchungen am Inventar des Laboratoriums von Oberstockstall/Kirchberg am Wagram* (Vienna–Cologne–Weimar: Böhlau Verlag, 1997); Marcos Martínón-Torres, "The Tools of the Chymist. Archaeological and Scientific Analyses of Early Modern Laboratories," in *Chymists and Chymistry*, 149–163; and R. Werner Soukup, "Crucibles, Cupels, Cucurbits. Recent Results of Research on Paracelsian Alchemy in Austria Around 1600," in *Chymists and Chymistry*, 165–172.

⁵⁸ Soukup and Mayer, *Alchemistisches Gold, Paracelsistische Pharmaka*, 20–21.

⁵⁹ On Tycho, see John Robert Cristianson, *On Tycho's Island. Tycho Brahe, Science, and Culture in the Sixteenth Century* (Cambridge: Cambridge University Press, 2000); and Kjell Lundquist, "The Plant Material in the Renaissance Garden of Tycho Brahe at Uraniborg (1581–1597) on the Island of Ven—A Restoration Project in Progress," *Museol. Sci.* 14, no. 1 (1998), suppl., 223–235.

⁶⁰ Hannaway, "Laboratory Design and the Aim of Science," 584–610. They have been widely used in research because of their relatively detailed descriptions and were considered to represent two contradictory ideals: the secrecy of Tycho—whose laboratory was built on an island, in an isolated fairy-tale castle surrounded by a fence and guarded by dogs—versus the openness of Libavius—who planned his chemical house to be in the middle of a town, accessible to its citizens. In one corner was the presumed occultness of the old alchemy as represented by Tycho, and in the other the apparent openness of Libavius' new discipline of chemistry. It has been demonstrated since that Tycho was not secretive at all about his alchemical pursuits, welcomed visitors and students in his household—who had the opportunity to take part in the experiments as well—while the design of Libavius' house followed John Dee's hieroglyphic monad, and certain operations were reserved for an elect few only. See William R. Newman, "Alchemical Symbolism and Concealment: The Chemical House of Libavius," in *The Architecture of Science*, edited by Peter Galison and Emily Thompson (Cambridge, MA: The MIT Press, 1999), 59–77. Although Tycho's laboratory was built underground, in response to which Libavius designed his above ground. Duke Friedrich of Württemberg's laboratory in Stuttgart was situated on the second floor of a house. See Nummedal, *Alchemy and Authority*, 122.

⁶¹ See Jost Weyer, *Graf Wolfgang II. von Hohenlohe und die Alchemie. Alchemistische Studien in Schloß Weikersheim 1587–1610* (Sigmaringen: Jan Thorbecke Verlag, 1992).

⁶² Bruce T. Moran, "Privilege, Communication, and Chymiatry: The Hermetic-Alchemical Circle of Moritz of Hessen-Kassel," *Ambix* 32, no. 3 (1985), 112.

⁶³ Martínón-Torres, "The Tools of the Chymist," 152.

⁶⁴ Bruce T. Moran, *Chemical Pharmacy Enters the University. Johannes Hartmann and the Didactic Care of Chymiatry in the Early Seventeenth Century* (Madison: American Institute of the History of Pharmacy, 1991).

⁶⁵ Johannes Homelius to Boldizsár Batthyány from Marchburg on 14 November 1587.

⁶⁶ Elias Corvinus to Boldizsár Batthyány on 5 March 1575 from Vienna. Batthyány must have followed Corvinus' advice and had a round furnace built, as the same year Herberstein writes that regrettably, "ich deine furnellos recenter inventos nicht sehen khan." Felician Herberstein to Boldizsár Batthyány from Graz on 10 February 1575.

⁶⁷ Elias Corvinus to Boldizsár Batthyány from Vienna on 14 September 1585.

⁶⁸ Corvinus to Batthyány from Vienna on 9 November 1575.

⁶⁹ Johannes Homelius to Boldizsár Batthyány from Marchburg on 6 March 1587.

⁷⁰ In small doses it has been applied as a diuretic and an aphrodisiac. See, for instance, Adamus Lonicerus, *Naturalis historiae opus novum* (Frankfurt: Egenolff, 1551), 299.

⁷¹ Elias Corvinus to Boldizsár Batthyány on 6 August 1574.

⁷² Corvinus to Batthyány from Vienna on 13 September 1574.

⁷³ Corvinus to Batthyány on 3 May 1587 from Vienna; and Corvinus to Batthyány on 29 June 1587 from Vienna.

⁷⁴ Corvinus to Batthyány from Vienna on 5 March 1575.

⁷⁵ Homelius to Batthyány from Marchburg on 3 April 1587.

⁷⁶ MOL, Libri regii, vol. 3, 1000.

⁷⁷ Among other people, his aunt, Katalin Svetkovics and Gergely Bejczy.

⁷⁸ A. R. Williams, "The Production of Saltpetre in the Middle Ages," *Ambix* 22, no. 2 (1975): 126–127.

⁷⁹ Corvinus to Batthyány from Vienna 6 December 1574.

⁸⁰ Nummedal, *Alchemy and Authority*, 82.

⁸¹ Géza Pálffy, *A tizenhatodik század története* (History of the Sixteenth Century), Magyar Századok (Budapest: Pannonica, 2000), 76–78.

⁸² I thank Géza Pálffy for providing me with a copy of the two letters written by Boldizsár Batthyány, to be found today in Bratislava.

⁸³ Boldizsár Batthyány to Miklós Pálffy from Némétújvár on 7 April 1589. Slovenský národný archív Bratislava; Arm. I. Lad. 3. Fasc. 8.

⁸⁴ Ferenc Nádasdy to Boldizsár Batthyány from Csepreg on 23 June 1574.

⁸⁵ Elias Corvinus to Boldizsár Batthyány from Vienna on 8 April 1575.

⁸⁶ Homelius to Batthyány from Marchburg on 14 November 1587.

⁸⁷ *Ibid.* On the Biblical reference, see the Gospel of Matthew 7, 6.

⁸⁸ Elias Corvinus to Boldizsár Batthyány from Vienna on 18 March 1572.

⁸⁹ Felician Herberstein to Boldizsár Batthyány from Guettenhag on 6 April 1572.

⁹⁰ Corvinus to Batthyány from Vienna on 1 November 1574.

⁹¹ Corvinus to Batthyány from Vienna on 1 March 1576.

⁹² Corvinus to Batthyány from Vienna on 12 December 1582.

⁹³ Corvinus to Batthyány from Vienna on 29 June 1587.

⁹⁴ Johannes Homelius to Boldizsár Batthyány from Marchburg (Maribor) on 6 March 1587.

Johannes Neander's letters from 1588 survive amongst Batthyány's correspondence. See P1314, 23591–92, microfilm no. 4871. Boldizsár had one of

Michael Neanders works, the *Parva Biblia Latinogermanica* (Wittenberg: Gronenberg, 1584). See Monok, Ötvös and Zvara, *Balthasar Batthyány und seine Bibliothek*, 49.

⁹⁵ Homelius to Batthyány from Pettau on 18 April 1587.

⁹⁶ Nummedal, *Alchemy and Authority*, 122.

⁹⁷ Deborah E. Harkness, “Managing an Experimental Household. The Dees of Mortlake and the Practice of Natural Philosophy,” *Isis* 88 (1997), 247–262.

⁹⁸ Nummedal, *Alchemy and Authority*, 82; and Alisha Rankin, “Becoming an Expert Practitioner. Court Experimentalism and the Medical Skills of Anna of Saxony (1532–1585),” *Isis* 98 (2007), 23–53.

⁹⁹ Weyer, *Graf Wolfgang II. von Hohenlohe*, 358.

¹⁰⁰ Elias Corvinus to Boldizsár Batthyány from Vienna on 8 April 1575. See also letters no. 8098, 8099, 8100, 8105.

¹⁰¹ Johannes Homelius to Boldizsár Batthyány from Marchburg on 24 October 1587; Felician von Herberstein to Boldizsár Batthyány on 6 April 1572 from Guettenhag.

¹⁰² Herberstein to Batthyány from Guettenhag on 6 April 1572.

MASTERS OF FIRE: ITALIAN ALCHEMISTS IN THE COURT OF PHILIP II

WILLIAM EAMON
NEW MEXICO STATE UNIVERSITY

King Philip II of Spain has been called many things. To contemporaries in the Catholic world, whether in Italy, Spain, or Germany, he was “the Most Catholic King” of Europe. His biographers called him “the Prudent” because they saw in him the qualities of caution and careful decision-making.¹ The seventeenth-century chronicler Baltasar Porreño represented him as a second Solomon for his wisdom and a man whose pure Catholic faith kept him free from superstition.²

Protestants in northern Europe saw a completely different Philip. William of Orange, the leader of the Dutch Revolt against Spanish rule, thought that the Spanish monarch was in league with the devil. To others, he was a fanatical Catholic who submitted his people to the yoke of the dreaded (and much exaggerated) Spanish Inquisition.³ To the nineteenth-century American historian Walter Prescott, Philip II, whose biography Prescott published in 1855, was evil incarnate, a king who “nurtured schemes of mad ambition” and denied Spain the opportunity to join the modern world.⁴ Within Spain, the image of Philip as a despot appeared as early as 1591, when a street satire published during a popular uprising at Zaragoza condemned the king as “a corrupt tyrant.”⁵ Modern defenders of regional liberties in the Iberian Peninsula remember Philip as a cruel tyrant who used his armies to repress liberties. Philip’s merciless repression of the Zaragoza revolt still stings in Aragon, so much so that a prominent historian recently called him “a gravedigger.”⁶

King Philip has been called many things: a prudent monarch, a Solomon of princes, a pious king, a superstitious fanatic, a devil, a tyrant, a despot, a gravedigger; but rarely has he been called a modernizing prince.⁷

And yet, by the standards of early modernity, there is no question that Philip was a modernizing prince. Nothing was more quintessentially modern than his ambition to pursue a “grand strategy” to create a world

empire.⁸ Although some of his imperial designs failed, others spectacularly succeeded. As the seventeenth-century English antiquarian William Camden grudgingly admitted, Philip became ruler of the first empire in history upon which the sun never set.⁹ Even those imperial projects that did fail—most notably the doomed “Invincible Armada” that he mounted against England—until then the largest seaborne military operation in history—seem to exhibit all of the characteristics of the ambition and attention to bureaucratic detail that characterize modern Great Powers.¹⁰ In creating bureaucratic institutions to govern his vast empire, Philip anticipated the rulers of modern states. He created a huge bureaucracy staffed by hundreds of officials that produced thousands of pages reports, memoranda, and correspondence: it is not for nothing that he has been called “the paper prince.”¹¹ And, not least, as that enduring monument, the Escorial, attests, Philip had an abiding interest in architecture as an expression of the state. His receptivity to the introduction of classical architectural ideas into Spain was certainly modern for the age, and part and parcel of his modernizing state program.¹²

Like other modernizing princes, Philip relied on foreign expertise for the latest advances in science and technology to improve conditions in the realm. It was a policy repeated by other rulers of the day. During Elizabeth’s reign, English mine owners had to rely on German expertise, since hardly anyone outside the German-speaking territories of Central Europe had mastered the complicated body of knowledge and skills required to mine and smelt copper and other ores. And without Spanish expertise in navigation acquired in Spain’s renowned Casa de Contratación by explorers such as Sebastian Cabot and Stephen Borough, it is difficult to see how England could have embarked on its own program of overseas expansion. Borrowing expertise was one of the early modern monarch’s most important tools of modernization.¹³

Because he governed much of Italy, and because Italy was Catholic, it was natural that Philip should turn to his possessions in the Italian peninsula for expert advice. In the 1560s, he invited Giovanni Battista Gesio, a native of Naples, to provide expertise in cosmography, astrology, and mathematics. Gesio spent several years in Philip’s court and gave the king frequent astrological advice. In 1578, he sent the king a memorandum demonstrating that the Kingdom of Portugal belonged to Philip “by laws natural and divine.” Later, he advised Philip that the Philippines were strategically as important as Flanders or Italy.¹⁴ To train Spanish gunners, Philip brought Giuliano Firuffino from Milan in 1585 to teach at the military school in Burgos; while for expertise in shipbuilding, he relied on Genoese craftsmen. By the 1580s, over 150 Genoese carpenters and

caulkers had been brought to the royal arsenal. Of the six regularly employed master craftsmen at the Barcelona arsenal in the 1570s, only one was a Spaniard—the rest were Italians—and by the 1580s, over 150 Genoese carpenters and caulkers had been brought to the arsenal.¹⁵

Philip's ambassadors continually sent back news about Italian expertise. When he learned from the embassy in Venice that a certain Orologia of Vicenza, a military engineer, was unhappy working for the Republic of Venice and would be willing to serve Philip for the right price, the king entered into secret negotiations to hire him. Philip, who was willing to pay high salaries to get the best talent, was assured by the Venetian ambassador that Orologio "is reputed to know more about the art of fortification than anyone in Italy."¹⁶

It was no less the case with alchemy. Like many Renaissance princes, Philip saw alchemy as a practical science that might be used to increase the wealth and well-being of the realm.¹⁷ It is also known that the king himself engaged in the art.¹⁸ Chronically short of money to finance his empire, he sought an alchemical remedy for his financial problems.¹⁹ It was not long before foreigners learned of Philip's alchemical interests and began making their way to Madrid in the hope of securing the king's patronage. In 1569, the Roman adept Marco Antonio Bufale came to Madrid offering Philip his alchemical secret to transmute base metals into gold; but, he complained, he was kept waiting for three months without ever hearing whether the king was interested.²⁰

Probably he wasn't. By then Philip's confidence in the possibility of making precious metals alchemically was shaken by the results of experiments conducted under his supervision in the early 1560s. Time and again he would turn away alchemists with similar promises. Yet he did not lose faith in alchemy entirely. Only by this time his alchemical interests focused, almost single-mindedly, on a different kind of philosopher's stone: the one that might serve as a panacea to cure all illnesses. Philip's health had never been good, and it began to deteriorate in the 1560s, when he suffered his first attacks of gout. And it was not just his own health that concerned him: the infante Fernando, the male heir to the throne, was also unwell, as were other members of the royal family.

As Mar Rey Bueno has shown, the royal family had long been interested in the manufacture of distilled waters. Prince Carlos was especially fond of cinnamon water, while Philip's sister, Doña Juana, had an almost insatiable appetite for rosewater. More than 300 liters of distilled waters were shipped to the royal palace every year, most made of the myriad variety of roses grown in the royal gardens at Aranjuez.²¹ To meet the court's demand for distilled waters, in 1564 Philip established the

office of Royal Distiller (*distilador real*) and appointed a Fleming, Francis Holbeeck, to serve in the post.²²

By the 1570s, court's interest in distillation shifted from a concentration on the manufacture of distilled waters to the manufacture of medicinal quintessences and, in particular, the quest for a universal panacea. Philip's belief in the possibility of obtaining such a wonder drug was fueled by his intense interest in what he and his contemporaries believed were the alchemical doctrines of the thirteenth-century Majorcan philosopher and mystic Ramon Lull. Although we now know that the alchemical writings attributed to Lull were spurious, no one in the sixteenth century doubted their authenticity.²³ Although King Philip had learned to be wary of gold-making alchemy—alchemical fraud was always a danger, as his cousin, the Holy Roman Emperor Rudolf II, could have told him—he was completely unsuspecting when it came to the grandiose claims of the pseudo-Lullian kind.²⁴

Central to pseudo-Lull's art of alchemy was the elixir, or philosopher's stone, a marvelous agent of transmutation that perfected metals and acted as a medical panacea.²⁵ Pseudo-Lull made extravagant claims for the alchemical elixir. It could be used to transform base metals into gold and to extract quintessences that preserve the body and prolong life. Pseudo-Lull, whoever he was, even thought that alchemy could be used to convert the infidels. Alchemy's "Promethean ambition"—as William Newman aptly characterizes it—to perfect nature in all its aspects certainly found expression in the pseudo-Lull's doctrines.²⁶

King Philip was a passionate adherent of Lull's philosophy. Although we do not know exactly when his curiosity about Lull's doctrines originated, it was certainly before 1576, when he already had a sizeable collection Lull's books in the library at the Escorial. By 1580, he was consulting with the Majorcan scholar Juan Seguí about establishing colleges dedicated to Lullist philosophy throughout the kingdom.²⁷ Whether the king saw in Lull's doctrine the key to universal knowledge, a means of converting the infidels, or the secret to the philosopher's stone is unclear. What is known is that by the 1570s, his court was a center of Lullist philosophical activity, and that pseudo-Lullian works made up a sizeable part of his collection of alchemical treatises.²⁸ Moreover, Philip vigorously promoted the manufacture of Lullian quintessences. Although he had grown skeptical of gold-making, he retained his faith in the medicinal possibilities of alchemy. In 1572, he had a distillation laboratory built at the royal palace designed specifically for manufacturing quintessences. Not long after, Italian alchemists and distillers, particularly

from the Kingdom of Naples, one of the leading centers of Lullism in Europe, began migrating to the court.²⁹

Information about the foreign alchemists who visited Philip's court is scarce. Most of the archival documents have been uncovered by Mar Rey Bueno in her masterful study, *Los señores del fuego*. The archival documents enable us to identify many of the alchemists who held official posts in the king's court; but the archives do not reveal much about their experiences in the court or, for that matter, the experiments they made there. For that, we must look elsewhere.

Fortunately, we have a fairly detailed record of one of the most prominent Italian visitors to Philip's court: the Bolognese surgeon Leonardo Fioravanti.³⁰ Fioravanti spent about a year in Spain in 1576-77, most of that period in Madrid, where he was a frequent visitor to the royal court. His account of his sojourn is contained in his book, *Della fisica*, which he published after he returned to Italy. Although, as I will point out later, he left a lot out, his description is an important personal record of alchemical practice in King Philip's court.

When he arrived in Spain in 1576, Fioravanti was already a famous empirical healer, known throughout the Mediterranean world for his unorthodox medical doctrines and his scathing critique of the medical tradition. Almost sixty years old, he was nearing the end of a long and controversial career as the proponent of what he called the "new way of healing." His patent medicines, which made up the core of his "new way," were sold in pharmacies throughout Italy and were a standard part of the apothecary's stock. His disputes with the medical establishment were legendary, and he had disciples as far away as England, where the London apothecary John Hester sold an assortment of his nostrums at his pharmacy in Paul's Wharf.³¹

Long before moving to Madrid, Fioravanti was well known in Spanish circles. Having served as a personal physician to the Spanish viceroys of Sicily and Naples during the 1540s, he had known numerous Spanish officers and royal officials. In 1550, he served as a surgeon in the imperial navy during the victorious siege of the north African city of Mahdiya, then a stronghold of the Turkish pirate Dragut.³² News of the victory in Africa was greeted with jubilation in Spain and Fioravanti's service to the crown would be remembered years later in Madrid.³³ By the time he made his journey to Spain, his writings were also widely known in that country; the king himself had four of Fioravanti's books in his library at the Escorial.³⁴ A devotee of alchemical medicine, he was an ardent proponent of distillation, then regarded by many as the most advanced method of manufacturing drugs.³⁵

Fioravanti began his study of alchemy in the 1540s in Naples, when he was in the service of the Spanish Viceroy, Don Pedro of Toledo. His residence near the Castel Nuovo became a center of experimental activity, where, he reported, “alchemists and distillers from various nations practiced.”³⁶ These individuals, many of whom were Spaniards, made up what Fioravanti later described as an “academy” that met in his house to do alchemical experiments.³⁷ He continued his alchemical experiments after he moved to Venice in 1558, and it was there that he met Ettore Ausonio, a little known but prolific natural philosopher from Milan. Ausonio, a fervent advocate of pseudo-Lullian alchemy, evidently introduced Fioravanti to the alchemical works attributed to Lull and to the legend surrounding Lull as an alchemist.³⁸ Prior to meeting Ausonio, Fioravanti was a practical alchemist whose principal interest had been making new drugs through distillation. In meeting Ausonio, he found a theory that matched his experimental practice.

Leonardo Fioravanti looked to Spain with wide open eyes, and he was not disappointed. In 1576, writing from Milan, he contacted the Viceroy of Naples through his agent and reminded him of the service that he had rendered to the emperor, King Philip’s father, during the African war. With typical bravado, he went on to say that, since then he had discovered many new secrets, which he promised to reveal as well as to offer his services to the king as a military surgeon. He would do this, the agent reported, “without pay, curing the sick and wounded if Your Majesty would do him the favor of granting him the title of Protomedico and Provider of Health in Italy without obligation to demonstrate his title and degrees to any college or Protomedico of any city.”³⁹ Although King Philip did not grant this audacious request (nor did he appoint Fioravanti to this nonexistent post), he did invite the surgeon to the court in order to demonstrate his cures and experiments. Fioravanti eagerly accepted the appointment.

Fioravanti quickly made his way into the alchemical community at Philip’s court. There he encountered numerous Italians and soon gathered around himself a circle of devoted followers. The group met weekly to discuss their alchemical experiments, he reports, and to talk about “the true medicine and surgery”—doubtless meaning Fioravanti’s “new way of healing.”⁴⁰ The Bolognese surgeon Giovanni Angelo Santini, whom Fioravanti identifies as *mio creato*, meaning his servant or laboratory assistant, was part of the group.⁴¹ This “*alchimista terribilissimo*” was so adept at making drugs that Fioravanti compared him to the greatest alchemists of all time, Ramon Lull, Arnald of Villanova, John of Rupescissa, and Paracelsus.⁴² Another Italian disciple, Agostino Bravo,

gained the nickname “*diabolico*” because of his familiarity with alchemical furnaces. “He knows more about fire than all the devils in hell,” Fioravanti enthusiastically proclaimed.⁴³

Fioravanti’s alchemical circle also included Spaniards. Juan Cornejo, a physician from Cordoba and one of the hypochondriac king’s legion of doctors, was one of them. A few years later, Cornejo wrote a treatise on making potable gold entirely out of plant substances which supposedly relieved the king’s gout so well that Cornejo dedicated the printed version of the treatise to the Pope.⁴⁴ Another Spaniard, the physician Juan Fernández, had offered his services to the king as early as 1572, when Philip’s royal secretary, Antonio Gracián, reported that, after years of labor and considerable expense, the alchemist had “discovered the secret” for transmuting base metals into gold. The king was skeptical of the claim. “I have always regarded this as a hoax,” Philip replied. Yet he asked Gracián not to send Fernández away, but to put the alchemist to work and to report back “when he has brought it to completion, which I am sure he never will.”⁴⁵ The letter from Gracián and the king’s reply have been interpreted to indicate Philip’s hostility toward alchemy; yet the fact that Fernández was still practicing alchemy in Philip’s court in 1576 and was active in Fioravanti’s circle seems to suggest otherwise.

Also present at Philip’s court, and presumably a member of Fioravanti’s circle, was an Italian aristocrat named Lorenzo Granita, a native of Salerno. Fioravanti claims that Granita, who he says was the equal of Ramon Lull, Arnald of Villanova, and John of Rupescissa, showed Fioravanti a method for making a philosopher’s stone that would transform any metal into the finest twenty-two carat gold.⁴⁶ Fioravanti does not claim that Granita actually made gold in his presence; instead, he reports, Granita showed him a manuscript containing a Spanish poem that held the secret of the philosopher’s stone. Fioravanti, according to his own admission, stole the manuscript and reprinted the verses at the end of *Della fisica* so that anyone might learn how to make gold.

The poem has been recently studied by Elena Castro and José Rodríguez, who identify it as the product of an adept from Valencia called Luis de Centelles and written between 1550 and 1560.⁴⁷ Although Fioravanti calls the work a “recipe” for making gold, it is in fact an elaborate allegorical poem that uses the analogy of courtly love to symbolize an alchemical process that results in the “perfection” of matter. The theme of the poem is the devotion of the poet to a woman—“who dwells in the heavens and is, without doubt, the daughter of the Sun” (*Toma la dama que mora en el cielo | ques hija del sol sin duda ninguna*)—which symbolizes prime matter.⁴⁸ Just as, through a series of displays of

devotion, the poet's love ascends and is perfected, the poet-chemist submits matter to a series of alchemical manipulations and converts it into something ideal and perfect. The symbolic "matrimony between man and woman" (*matrimonio de hombre y muxer*) becomes a metaphor of the alchemist operating on matter. Strongly influenced by the alchemical writings attributed to Ramon Lull and Arnald of Villanova, the poem describes a progression of operations that parallel those detailed in the *Testamentum* of pseudo-Ramon Lull—*olutio*, *ablutio*, *congelatio*, *fixatio*, and *multiplicatio*—leading to the elixir, a "medicine" of transmutation and universal healing.⁴⁹ It is far from clear whether Fioravanti understood these obscure allegorical verses, for he made no effort whatsoever to explicate them. Nevertheless, he could not conceal his enthusiasm for having discovered—or, as he admitted, stolen—the secret that all the alchemists had been looking for.

There is in Fioravanti's account—as in all of his writings—a certain amount of hyperbole. It is difficult to take his word at face value. Indeed, *Della fisica* is a characteristic example of his supreme skill at self-fashioning. For all that we can tell from reading the work, he was accepted in Philip's court—for that matter, in all of Spain—as a prophet of a new art of healing. Yet behind this rosy picture there is another story, dark and filled with court intrigue. As it turns out, despite the royal family's enthusiasm for distilled essences, the alchemists were not received with universal approval in the court. In fact, the foreigners who arrived in Madrid touting obscure Lullian doctrines and newfangled ways of making drugs drew the ire of powerful court physicians. Fioravanti, one of the most prominent foreign alchemists in Philip's court, was caught in the net.

Part of the story, although certainly not all of it, is told in a deposition that Fioravanti gave to the Royal Protomedicato in response to charges against him that he had been practicing medicine illegally in Spain and, with his novel and unorthodox cures, had poisoned the servant of one of the king's courtiers.⁵⁰ The man who would judge Fioravanti was Prince Carlos's personal physician, Don Diego Olivares, the sworn enemy of the alchemists. Olivares was intensely jealous of the alchemists who had gained the king's favor. He aimed to rid the court of the foreigners, who [he said] "come in through the back door and leave through the front" (*entran por la manga y salen por el cabezón*).⁵¹ If previously Fioravanti could brush off such accusations with bravado and bold challenges, this time he was in real trouble.

The trial started out badly for Fioravanti and the circumstances did not improve. In the first place, he was plainly guilty of at least two of the

charges against him, namely, of practicing without a degree from a Spanish university and of manufacturing his own medicines rather than having them made by pharmacists. According to Castilian law, only those who had graduated from one of the three Castilian universities, Valladolid, Salamanca, or Alcalá, were legally authorized to practice medicine in the Kingdom of Castile. In addition, they had to pass an examination administered by the Protomedicato. Fioravanti had done neither. Hence, he had obviously been practicing medicine without proper authorization. The Royal Protomedicato strictly forbade unlicensed practitioners and fined them stiffly: the penalty for practicing without a license was a 6,000 *maravedís*, about the equivalent of six months wages for a skilled pressman. In addition, as Fioravanti tells it in his deposition, addressed to the Royal *Fiscál*, Ramón Martín, who was charged with prosecuting the case, “I am charged with making harmful cures with my medicaments, and with using lethal drugs to poison Tristan de la Torre’s servant.”⁵² The last charge accused him, rather ambiguously, of practicing surgery “against the precepts of the authorities.”

Fioravanti countered the charges with a spirited defense—on one hand pleading ignorance of the laws and, on the other, arguing that even if he did break the law, it was for the good of the realm. After all, he asserted, his “new way of healing” was superior to the methods practiced by the Spanish physicians. He opened his defense with a startling claim. “In response to the accusations made against me by Señor Martín, I say that the contrary is true of every one of them,” he pronounced. “I say further that His Majesty’s court should acquit me of each and every one of the charges and set me free and allow me to practice freely anywhere in this realm where I may be called.” As for violating the laws against practicing medicine without a license, “I knew nothing of these laws. If I broke any law, it’s because I’m a foreigner newly arrived in these parts and I’m not familiar with the laws of the land.”

Of course he was being disingenuous. Having lived in Naples and Milan, he had plenty of experience with the Spanish system of medical regulation. It is impossible to believe that he would not have assumed that similar laws applied in Spain, as they did everywhere in Spanish Italy. Perhaps he felt that his proximity to the court would protect him. If so, he was mistaken. His plea that he was an inexperienced foreigner must have fallen on deaf ears.

Fioravanti responded to the remaining charges in his customary way: he went on the attack, boldly proclaiming that his methods were superior to those of the Spanish physicians, because his ways were nature’s ways. “If Tristan’s servant died while in my care, it wasn’t because of the way I

treated him but because of his grave and mortal illness, and because afterwards he was treated by other doctors who didn't understand his sickness and applied remedies contrary to mine." He went on in a theological vein:

Death is natural. To die and to cure are in God's hands, not the hands of doctors or in the power of medicines. If it were not so, men wouldn't even recognize God as our Lord but would consider themselves as Gods on earth. Being mortal, it's necessary that men die when their hour comes. God does his will. People die every day, and the doctors who treat them shouldn't be blamed. To believe otherwise is contrary to the Holy Catholic Faith.

As for his titles, he could truthfully say that his degrees came from one of Europe's most respected medical schools, even if it was Italian and not Castilian. "When you consider that I have the titles of Doctor in Physic and Surgery from universities as famous as Bologna and Naples," he argued, "naturally I didn't think it would be necessary to have any other license. I've been practicing with these degrees for more than forty years, all the while doing good works for the poor, for the love of God, so why would such a license be necessary? If I erred, I erred out of ignorance, not knowing the law."⁵³

The court rejoined that, since Fioravanti was ignorant of Latin, his degrees could not possibly be legitimate. He did not claim to know Latin, Leonardo responded. Besides, "Speaking in Latin is no proof that you know medicine or how to heal." All the authorities wrote in their own mother tongues, Hippocrates and Galen in Greek, Avicenna in Arabic, and so on. "For medicine originates not in books but in experience, which various authors later wrote down in their own language and not in Latin. Afterwards their books were translated from Arabic and Greek into Latin, because in those times the Latin language was more common and universal." He continued:

Truthfully, I haven't studied Latin to know medicine because I didn't have to. Although it's true that medicine can't be understood without knowing philosophy, it doesn't follow from this that you can't be a philosopher without knowing Latin. For, philosophy is nothing but knowing the operations of nature by natural reason and with this knowledge understanding the causes of things, which can certainly be understood without knowing Latin. Did the first philosophers learn philosophy from Latin books? Did they learn it in the university? Of course not. And so the professors of those colleges, having witnessed my doctrine and intelligence, with that experience—which is after all the mother of all

wisdom in this profession—conceded to me these titles and privileges, which, as I said, are certain and true and legal.

As to the accusation that he made medicines in his own house, contrary to the law forbidding anyone but pharmacists from making drugs, Leonardo defiantly stood his ground. “I confess to the charge,” he asserted, and continued his defense with an audacious discourse on the superiority of the new way of healing, pitting himself squarely against the “Arabists” who dominated Spanish medicine.

The true method of healing, whether in medicine or surgery, is the one that I have written about in my books. My method is founded upon the true doctrine of Hippocrates, which Avicenna understood poorly. But the moderns, such as Ramon Lull, Arnald of Villanova, Abacue the Jew, Paracelsus, Cornelius Celsus, and Philip Ulstadius, understood it well and used the same methods. As Your Excellency knows, Hippocrates writes, “extreme remedies are to be employed when treating extreme sicknesses.” This proposition is the foundation of my doctrine, but it has been badly practiced by Avicenna’s followers, since grave sicknesses and diseases engendered from bad qualities have to be cured with strong medicines, not by ordinary weak medicines.

With his feet firmly planted in the pseudo-Lullist alchemical tradition, Fioravanti proceeded to launch an attack on the Spanish physicians and apothecaries, accusing them of using obsolete methods and outdated equipment to make their remedies. As he does in all of his medical writings, he dwells on bodily pollution. In a lengthy digression on the therapeutics of cleansing, he argues that illnesses are engendered by impurities that collect in the stomach, which expels them to the rest of the body, causing many different kinds of sickness. Therefore, it stands to reason that the cure is to drive these pollutions, and the most natural and efficient way to do that is through the windpipe, i.e., by vomiting as opposed to purging. “This was the method I followed in treating Tristan’s servant, as I do in treating all of my patients,” he explained. “But the poor lad was too far gone when I arrived at the scene. I did all I could for him but the doctors who came after me refused to follow my instructions.”

The same applies to remedies: they, too, must be free of corruption. Defending himself against the charge of having made his own medicines at home rather than purchasing them from the pharmacists, Fioravanti explained that he did it because he had to distill his medicaments in glass vessels, not in the metal alembics that the Spanish apothecaries use. “My medicines are free of the bad effects of the distilled waters that are corrupted and rotten because they aren’t extracted in glass vessels. The

alembics they use here exhale the incorruptible and substantial spirits and absorb the corrosive quality of the metal and therefore become corrupted and putrefy.” Because his drugs were perfectly distilled, he contended, “They take on the occult properties of nature much better than those made by any other method” and thus are better able to resolve peccant humors. The Spanish apothecaries didn’t understand the process of distillation, he alleged. Moreover, he had been invited to the court specifically to do experiments with his medicaments in order to benefit His Majesty’s royal army and navy. “Since I didn’t find any of the medicaments that I needed here, nor anyone who knew how to make them,” he explained, “I had to make them myself in my house. I did this in order to do the experiments ordered by the mandate of the king.”

Regarding the charge of having used poisons to treat his patients, it was completely false, Fioravanti declared. “In fact, the contrary is true, for experience shows that my medicines are antidotes, not poisons. They defend the body from the poison that comes from wounds caused by iron projectiles by driving out the venom, as is proved by the experiments that I made in His Majesty’s court.” He went on to explain, in alchemical terms, how his methods extract the “incorruptible spirits,” which are used in his medicines to “vivify and conserve the human body by an occult property of nature.”

The final charge against him was that he had practiced surgery “against the precepts of the authorities.” Leonardo rejected the charge, arguing that his methods “conform to nature and natural reason, which is something that the physicians and surgeons ought to attend to more.” Stepping up his attack, he condemned the physicians for their reliance on diet and surgeons for failing to observe the basic rule of surgery, which is to “consolidate and join” the wound as it was before the injury.

Fioravanti concluded his defense with a strangely out-of-place digression on the therapeutic power of the alchemical quintessence of human blood. Citing as his authority “Abacue the Jew” (*Abacue hebreo*) whom he claims to quote from a book that was discovered in the library of King Edward of England, he explains:

This book, which King Edward guarded as sacred and divine, treated of the quintessence of human blood. It says that a dead man dismembered is worth more for human health than ten thousand living men, and the other animals have this same effect. The more our medicines approach the nature and quality of man, the more effective they will be. For this reason my new way of healing, both in medicine and surgery, and the medicines made by these methods, are certain and true and rational and proved by experience.⁵⁴

The medicinal use of human body parts, including blood, was a subject that fascinated Fioravanti—as it did many of his contemporaries.⁵⁵ He wrote about it at length in a chapter in *Della fisica*.⁵⁶ Human fat, he writes, “as everyone knows, is warm, penetrating, and soothing and when used as an ointment is of great value where the body has hardened and the sinews are tight.” You can also distill a water from the human liver, a mere half a dram of which, when drunk every morning for a month, cures those whose liver is half rotted. A water distilled from the cranium cures the falling sickness. Fioravanti made extravagant claims for his “quintessence of human blood, with which, given as a drink to a person who had all but given up the ghost, is suddenly brought back to life.” These seemingly bizarre ideas about the body were not peculiar to Leonardo. To people of the Renaissance, the human body, even a dead one, was considered to be something positively useful.⁵⁷

It is difficult to know what the authorities thought of Fioravanti’s lengthy, rambling, and at times incoherent defense. His severe condemnation of the condition of Spanish medicine and surgery cannot have helped him. Nor could his defiant stance have won favor among the members of the Protomedicato. One can only wonder whether he was fully in control of his mental faculties, or whether his megalomania got the best of him.

The outcome of the proceeding is not known.⁵⁸ Very likely, we shall never know. However, it is difficult to imagine that the court would have exonerated him and given him permission to, as he impertinently demanded, “practice my method freely anywhere in the realm.” Given his sworn hostility to the alchemists, surely Olivares would have slapped Fioravanti with a heavy fine and used his influence to make the Italian surgeon unwelcome at the court. Whatever the outcome might have been, not long after the trial Fioravanti returned to Italy and settled in Naples, where he recorded his memories of Spain in *Della fisica*. He dedicated the work to Philip II, “for he is without any doubt the most Catholic and Christian king in the whole world.”⁵⁹

Fioravanti’s humiliation was a triumph for Olivares and a setback for the proponents of alchemical medicine. In 1579, Philip invited a Neapolitan, Giovanni Vincenzo Forte, to the court and provided him with a house and distillation laboratory in the Royal Garden. The king asked Forte specifically to “prepare quintessences according to the practice of Ramon Lull for the health of the human body.”⁶⁰ Forte’s efforts were continually thwarted by the court physicians, especially Olivares, who saw the Italian as an imposter who would drain the resources of the crown.⁶¹ Two years after his appointment, Forte complained to Cardinal Granvelle,

one of the king's ministers, that the court physicians stood in his way at every turn and kept him from accomplishing anything.⁶² Olivares, whom Fioravanti jokingly called "barrel belly" for his corpulent physique, was a powerful man who knew how to throw his weight around.

While Olivares could claim a temporary victory, after his death in 1584 the pendulum swung back in favor of the alchemists. Francisco Valles, the king's most trusted physician and a passionate devotee of alchemical medicine, was appointed Protomedico, a post that he held until his death in 1592.⁶³ Valles vigorously promoted Philip's design to manufacture the quintessences described by pseudo-Lull.⁶⁴ Later, he was given the honorific title of "His Majesty's Distiller" (*Destilador de Su Majestad*).⁶⁵

Philip and his successors continued to rely on Italian alchemists long after Leonardo Fioravanti's departure from the court. When, in 1585, Philip began the construction of an immense distillation laboratory at the Escorial, Giovanni Vincenzo Forte was assigned to oversee its construction. The centerpiece of the laboratory was a gigantic *torre filosofal* (philosophical tower), a still over twenty feet high and capable of producing two hundred pounds of medicinal waters per day. After Giovanni Vincenzo returned to Italy in 1591, his son, Valerio, was appointed Chief Distiller (*destilador mayor*) and put in charge of the laboratory. For nearly a century, Forte's heirs continued to serve in that capacity, comprising a kind of dynasty of royal distillers. In addition to Italians like Fioravanti and Forte, Catholic scientists from Protestant countries came to escape religious persecution as well as to continue their research in the Royal Pharmacy (*Real Botica*), the greatest pharmaceutical laboratory in the world. If you were interested in the spagyric arts, Philip's court was obviously the place to be.

* * *

My intention in this paper has been, in part, to help rectify an imbalance in modern scholarship that persistently excludes Spain from the overall picture of early modern science. First of all, I wanted to show that Spain was by no means an isolated outpost of Renaissance scientific culture. As the example of the Italian alchemists suggests, Philip II's court was a magnet for natural philosophers from Catholic Europe. I also wanted to suggest that scientific activity in Philip's court illustrates many of the same patterns of scientific patronage that scholars have observed in other European courts. Indeed, in some respects Philip's court was more modern, not less, than other courts; for not only did Philip support scientific activity through his personal patronage, he also created and

supported institutions for the advancement of science, such as the Casa de Contratación, which promoted the sciences of navigation, cosmography, and cartography.⁶⁶ As the guardian of the world's greatest empire, he found science and technology to be useful, and he opened his court to foreigners who might help him advance his aims. In the late-sixteenth century, when Leonardo Fioravanti and a host of other Italians visited Spain, King Philip's court in Madrid was an important center for the investigation of what was then regarded as one of the most powerful of all sciences: alchemy.

Notes

¹ Henry Kamen, *Philip II of Spain* (New Haven: Yale University Press, 1997), 221.

² Balthasar Porreño, *Dichos, y hechos de el señor rey Don Phelipe Segundo, el prudente, potentissimo, y glorioso monarca de las Españas, y las Indias* (Madrid, 1748), 94.

³ Henry Kamen, *The Spanish Inquisition: An Historical Revision* (London: Phoenix Press, 1997).

⁴ Richard L. Kagan, "Prescott's Paradigm: American Historical Scholarship and the Decline of Spain," *American Historical Review* 101 (1996): 423-46.

⁵ Henry Kamen, *Imagining Spain: Historical Myth and National Identity* (New Haven: Yale University Press, 2008), 52.

⁶ Quoted in Kamen, *Imagining Spain*, 62.

⁷ For historiography, now gradually shifting away from the traditional demonization of Philip, see Kamen, *Philip II*; and Goeffrey Parker, *Philip II*, 4th ed. (Chicago and La Salle: Open Court, 2002).

⁸ Goeffrey Parker, *The Grand Strategy of Philip II* (New Haven: Yale University Press, 1998).

⁹ Quoted in *ibid.*, 3.

¹⁰ Paul Kennedy, *The Rise and Fall of the Great Powers: Economic Change and Military Conflict from 1500 to 2000* (New York: Vintage, 1989).

¹¹ Parker, *Grand Strategy*, 17; Maria José Rodríguez-Salgado, "The Court of Philip II of Spain," in R. G. Asch and A. M. Birde, eds, *Princes, Patronage and the Nobility: The Court at the Beginning of the Modern Age* (Oxford: Oxford University Press, 1991), 205-44. On Philip's scientific bureaucracy, see Antonio Barrera-Osorio, *Experiencing Nature: The Spanish American Empire and the Early Scientific Revolution* (Austin: University of Texas Press, 2006).

¹² Javier Rivera Blanco, *Juan Bautista de Toledo y Felipe II : la implantación del clasicismo en España*, Serie Arte y Arqueología, no. 3 (Valladolid: Universidad de Valladolid, Secretariado de Publicaciones, 1984).

¹³ Eric Ash, *Power, Knowledge, and Expertise in Elizabethan England* (Baltimore: Johns Hopkins University Press, 2004), 19-54.

¹⁴ David Goodman, *Power and Penury: Government, Technology and Science in Philip II's Spain* (Cambridge: Cambridge University Press, 1988), 6-8, 61-65.

¹⁵ Goodman, *Power and Penury*, 124; 96. Philip did not hire only Italians. He also hired Germans founders and mine workers (after thoroughly vetting them for possible Protestant sympathies) to make artillery pieces and to supervise mining operations in the Iberian Peninsula (ibid, 115). In addition, he contracted with the Fugger banking house for German mineworkers to work in the mines of New Spain, cautioning him that no Lutherans be included (ibid, 157).

¹⁶ Goodman, *Power and Penury*, 126.

¹⁷ For Philip's interests in alchemy, see F. Rodríguez Marín, *Felipe II y la alquimia* (Madrid, 1927); Javier Ruiz, "Los alquimistas de Felipe II," *Historia 16 12* (1977), 49-55.

¹⁸ Rodríguez Marín, *Felipe II y la alquimia*, 19f.

¹⁹ Goodman, *Power and Penury*, 12; Rodríguez Marín, *Felipe II y la alquimia*, 17ff.

²⁰ Francisco Javier Puerto Sarmiento, "La panacea aurea: Alquimia y destilación en la corte de Felipe II (1527-1598)," *Dynamis 17* (1997): 107-40, p. 116.

²¹ Mar Rey Bueno, *Los señores del fuego: Destiladores y espagíricos en la corte de los Austrias* (Madrid, 2002), 40.

²² Bueno, *Los señores del fuego*, 36.

²³ Michela Pereira, *The Alchemical Corpus Attributed to Raymond Lull*, Warburg Institute Surveys and Texts, XVIII (London, 1989); and idem, "La leggenda di Lullo alchimista," *Estudio Lulianos 27* (1987): 145-63.

²⁴ On alchemical fraud, see Tara Nummedal, "The Problem of Fraud in Early Modern Alchemy," in *Shell Games: Scams, Frauds and Deceits in Europe, 1300-1650*, ed. Richard Raiswell and Mark Crane (Toronto, 2004), pp. 37-51.

²⁵ Michela Pereira, "Teorie dell'elixir nell'alchimia medievale," *Micrologus 3* (1995): 103-48.

²⁶ William R. Newman, *Promethean Ambitions: Alchemy and the Quest to Perfect Nature* (Chicago: University of Chicago Press, 2004).

²⁷ The design did not come to fruition. Goodman, *Power and Penury*, 10.

²⁸ Miguel López Pérez, "Algunos rasgos sobre la relación entre lulismo y pseudolulismo en la Edad Moderna," *Dynamis: Acta Hispanica ad Medicinæ Scientiarumque Historiam Illustrandam 22* (2002): 327-50. Francisco Javier Puerto Sarmiento and Guillermo Folch Jou, "Los manuscritos alquímicosseudolulianos conservados en la Biblioteca Nacional de Madrid," *Boletín de la Sociedad Española de Historia de la Farmacia 30*, no. 119 (1979): 227-42; René Taylor, "Architecture and Magic: Considerations on the *Idea* of the Escorial," in *Essays in the History of Architecture Presented to Rudolf Wittkower*, ed. Howard Hibbard and Milton J. Lewine (New York, 1969), 81-109.

²⁹ For Philip's interests in alchemy, see Miguel López Pérez, *Asclepio renovado: Alquimia y medicina en la España Moderna (1500-1700)* (Madrid: Ediciones Corona Borealis, 2003); F. Rodríguez Marín, *Felipe II y la alquimia* (Madrid, 1927); Javier Ruiz, "Los alquimistas de Felipe II," *Historia 16 12* (1977), 49-55.

³⁰ Born in 1517 in Bologna, Fioravanti began practicing as an empiric or apprentice surgeon around 1533. In 1548, he seems to have experienced some sort of epiphany. According to his autobiography, which begins in October of that

year, he left Bologna to “go out into the world” in search of the secrets of nature: *Il Tesoro della vita humana* (Venice, 1570), 17v. On Fioravanti’s life and career, see Davide Giordano, *Leonardo Fioravanti Bolognese* (Bologna, 1920); and Piero Camporesi, *Camminare il mondo: Vita e avventure di Leonardo Fioravanti medico del Cinquecento* (Milan, 1997). More recent and focused on Fioravanti’s alchemical activity is William Eamon, *The Professor of Secrets: Mystery, Medicine, and Alchemy in Renaissance Italy* (Washington: National Geographic Books, 2010).

³¹ John Hester, *These Oiles, water, Extractions, or Essences, Saltes, and other Compositions; are at Paules wharfe made to be solde, by John Hester, practitioner in the arte of Distillation* (London, n.d.). On Hester, see Paul H. Kocher, “John Hester, Paracelsan (f. 1573-93),” in *Joseph Quincy Adams Memorial Studies*, ed. J. McManaway, G. E. Dawson, and E. E. Willoughby (Washington, 1948), 621-38. In a letter of 2 December 1568, Fioravanti records that he sent a shipment of eye water to England (*Tesoro*, 228).

³² On the African war, see Fernand Braudel, *The Mediterranean and the Mediterranean World in the Age of Philip II*, trans. S. Reynolds (New York, 1972), 2:907-11. A more detailed narrative is in P. Alberto Guglielmotti, *La guerra dei pirati e la marina pontificia dal 1500 al 1560* (Florence, 1876), 2:181-244. Fioravanti’s account of the African campaign is in *Tesoro*, 60-7. Mahdiya was known to the Europeans as Aphrodisium or, simply, Africa.

³³ Contemporary histories of the war include Juan Cristobal Calvete de Estrella, *La conquista de la ciudad de Africa en Berberia* (Salamanca, 1558); Horatio Nucula, *Commentariorum de bello Aphrodisiensi libri quinque* (Rome, 1552); Pedro de Salazar, *Historia de la guerra y presa de Africa* (Naples, 1552); idem, *Hispania victrix* (Madrid, 1570); and Cornelius Sceppe, *Rerum à Carolo V cesare Augusto in Africa bello comentarii* (Antwerp, 1554).

³⁴ The inventory of Philip’s library at El Escorial is published in *Documentos para la historia del monasterio de San Lorenzo el Real de El Escorial*, vol. VII, ed. Gregorio de Andrés (Madrid, 1964). As early as 1561, a section of Fioravanti’s *Capricci medicinali* was translated into Spanish: *Discurso de Fioravanti sobre la medicina universal y conservación del cuerpo*, Biblioteca Nacional MS 6149, f.66.

³⁵ Bruce Moran, *Distilling Knowledge: Alchemy, Chemistry, and the Scientific Revolution* (Cambridge, MA: Harvard University Press, 2005), *passim*.

³⁶ *Tesoro*, 50.

³⁷ Fioravanti mentions the academy in a letter to the Neapolitan physician Alfonso da Rienzo, dated 14 April 1568 (*Tesoro*, 234). Fioravanti’s academy may have imitated another, almost contemporary Neapolitan academy called the Accademia Segreta, which was formed in the 1540s with similar purposes in mind. For the latter, see William Eamon and Françoise Paheau, “The Accademia Segreta of Girolamo Ruscelli. A Sixteenth-Century Italian Scientific Society,” *Isis* 75 (1984): 327-42.

³⁸ Ausonio’s major alchemical work, the unfinished *Trattato sopra l’arte dell’alchimia* (MS Milan, Biblioteca Ambrosiana, Q 118 Sup.), is a fervently Lullist tract. Although there is no record of when the two met, it can be

established that Fioravanti knew Ausonio before 1567, when he published the *Specchio di scienze universale*, where Fioravanti mentions the Milanese alchemist as “un huomo rarissimo & dotissimo,” *Specchio*, 83v. On Ausonio and the Lull legend, see Pereira, *The Alchemical Corpus Attributed to Raymond Lull*, pp. 48-9.

³⁹ Archivo General de Simancas, Estado, leg. 1065, fol. 99, “*Relaciones de memoriales de particulares al virrey de Nápoles*,” 1576.

⁴⁰ *Della fisica*, 362. Puerto suggests that Fioravanti’s alchemical circle actually occupied a marginal status in the court. F. Javier Puerto Sarmiento, “Alquimistas, destiladores y simplistas en la corte de Felipe II,” in *Los hijos de Hermes: Alquimia y espagiria en la terapéutica española moderna*, ed. F. J. Puerto Sarmiento, et al. (Madrid, 2001), 349-71, p. 356.

⁴¹ *Della fisica*, 296, 352, 362, 372.

⁴² *Della fisica*, 172.

⁴³ *Della fisica*, 372.

⁴⁴ Juan Cornejo, *Discurso y despertador preservativo de corrimiento y enfermedades dellos . . . (el modo y traça de hazer el oro potable del lentisco, y sus diferentes cosimientos, y la elección de la plantas, para que se hagan puntual* (Madrid, 1594). This work also exists in a manuscript in the Biblioteca Nacional, Madrid, MS 3355. On Cornejo, see Miguel López Pérez, *Asclepio renovado*, pp. 113-14.

⁴⁵ IVDJ 61(ii)/261. Antonio Gracián to the king. The document is reproduced in George Kubler, *Building the Escorial* (Princeton: Princeton University Press, 1982) in an appendix, “Herrera and Alchemy,” p. 140. However, Kubler failed to recognize Gracián’s monogram and mistakenly supposed the letter to be from Herrera. See the discussion in Goodman, *Power and Penury*, 13.

⁴⁶ *Della fisica*, 374.

⁴⁷ Elena Castro Soler and José Rodríguez Guerrero, “Luis de Centelles y las Coplas de la Piedra Philosophal,” *Azogue*, 4 (2001); URL:

<<http://www.revistaazogue.com>>. For a critical edition of the text, see “Las Coplas de la Piedra Philosophal (tres versiones),” ed. Elena Castro Soler, *Azogue*, 4 (2001); URL: <<http://www.revistaazogue.com>>

⁴⁸ Identified with *argento vivo* (which, the poet explains, is not necessarily mercury, but a mercurial matter, having the capacity to change into other materials).

⁴⁹ Michela Pereira, “*Medicina* in the Alchemical Writings Attributed to Raimond Lull (14th-17th Centuries),” in Piyo Rattansi and Antonio Clericuzio, eds, *Alchemy and Chemistry in the 16th and 17th Centuries* (Dordrecht: Kluwer, 1994).

⁵⁰ British Library, Add. MS 28.353. The manuscript is published in full in my article, “The Charlatan’s Trial: An Italian Surgeon in the Court of King Philip II, 1576-1577,” *Cronos* 8 (2005): 3-30. All quotations from Fioravanti defense are from this source. As far as I know, the only other historian who has noticed this document is David Goodman (*Power and Penury*, 259, n. 140). For additional details about the trial and its context, see Eamon, *The Professor of Secrets*, pp.283-93.

⁵¹ Qu. Rey Bueno, *Los señores del fuego*, 53: “*Estos estrangeros entran por la manga y salen por el cabezon.*”

⁵² There are few clues to Tristan's identity; he was, evidently, a well-connected member of the court.

⁵³ There is no record of Fioravanti's having obtained a degree from the University of Naples. Probably he was referring to a license to practice in Naples that he received from the Neapolitan Protomedico.

⁵⁴ The "sacred book" that Leonardo refers to was, evidently, one of the alchemical tracts that Lull supposedly gave to King Edward III. The identity of Fioravanti's "Abacue hebreo" is unclear; perhaps it was a corruption of the name of the prophet "Abacuc" (Habbakuk) or of some other alchemical figure. See Pereira, *Alchemical Corpus*, 48-9; idem, "Leggenda di Ramon Lull."

⁵⁵ Piero Camporesi, *Juice of Life: The Symbolic and Natural Significance of Blood*, trans. Robert R. Barr (New York: Continuum, 1995).

⁵⁶ "Discurso dell'huomo, et delle medicine che di esso si posson cavare," *Della fisica*, 165-7.

⁵⁷ Giovanna Ferrari, "Public Anatomy Lessons and the Carnival: The Anatomy Theatre of Bologna," *Past and Present*, 117 (1987): 50-106, p. 101; Piero Camporesi, *Bread of Dreams: Food and Fantasy in Early Modern Europe*, trans. David Gentilcore (Chicago: University of Chicago Press, 1989), 48-50.

⁵⁸ The papers of the Protomedicato destroyed in a fire of 1939.

⁵⁹ *Della fisica*, a2v: "porque sin duda ninguna el es Catolichissimo y Christianissimo sobre todos los otros Reis del mundo."

⁶⁰ Quoted in Goodman, *Power and Penury*, 14. On Forte's activities in the court, see Rey Bueno, *Los señores del fuego*, 51-7.

⁶¹ Rey Bueno, *Los señores del fuego*, 52.

⁶² Rey Bueno, *Los señores del fuego*, 54.

⁶³ Rey Bueno, *Los señores del fuego*, 92.

⁶⁴ On Valles's career and publications, see Rey Bueno, *Los señores del fuego*, 91-8.

⁶⁵ Mar Rey Bueno, "El informe Valles: los desdibujados límites del arte de boticarios a finales del siglo XVI (1589-1594)" *Asclepio* 56, no. 2 (2004): 243.

⁶⁶ Barrera-Orsorio, *Experiencing Nature*.

FOOL'S SILVER: ALCHEMY AND FRAUD IN SIXTEENTH-CENTURY SPAIN

MARIA TAUSIET,
CSIC (MADRID)

“This witness did answer him with anger, saying that he should take his leave with the grace of God and with his fool's silver and goblin's jewels.”¹

One of the main obsessions of the Early Modern Era was that of determining the notions of true and false, in order to apply them to various fields of knowledge and thus establish the divide between the lawful and the unlawful. This trend was to have a particular impact on the fields of religion and science, where it became necessary to distinguish not only between true and false spirits, relics or miracles, but also between genuine and fake astrologers and alchemists. Situated in the middle ground between idealism and materialism, alchemy was prime territory for such tensions, since although it had its authentic “philosophers”, men dedicated to the spiritual side of this hermetic science, it was widely accepted that the vast majority of those practising alchemy had no other goal than that of making money. Between the fourteen and eighteen hundreds, attacks on fake alchemists were to become a leitmotif in both the literature and legal systems of Europe. Meanwhile, the idea of an alchemical utopia and dreams of creating the philosophers' stone were becoming increasingly popular across all social classes.²

Given that alchemy was by its very nature a secretive business,³ however, first-hand testimony about its operations is less than abundant. Scarcer still are documents testifying to its practice among the lower echelons of society.⁴ One valuable source of information about alchemical activities being undertaken beyond the immediate environs of the court is the short work written in 1593 for Philip II by the Irishman Richard Stanyhurst to help the king distinguish between authentic and fraudulent alchemists. With an opening reference in its lengthy title to the use of the

touchstone to test the genuine nature of gold, his treatise is introduced as “The touchstone of alchemy, in which are declared the true and false effects of the art, and the ways in which to recognise the false practices of vagabond rogues and impostors”.⁵

The work gave four pointers to recognising such impostors: immorality, ignorance, poverty and the use of extravagant materials. Only good Christians, therefore, who were well-versed in the art, who had sufficient resources to survive with dignity and without having to resort to fraud, and who were prepared to work with common substances, were to be trusted. The archetypal wandering, good-for-nothing, fraudulent alchemist was starkly contrasted with the peaceful sage who went about his business almost unnoticed, devoting his disinterested efforts to achieving the *magnum opus*.

The alchemist monk

At first sight then, Brother Juan de Santa Ana fits the profile of the virtuous alchemist to perfection. Much is known about Brother Juan thanks to the inquiries carried out by various judicial bodies between 1593 and 1596 aimed at establishing the authentic nature of his activities. He lived in the Santa Engracia monastery in Saragossa, devoting his time to prayer, but also to the study and practice of alchemy. He occupied an individual cell, in which he had installed various cressets and other instruments necessary for his art (crucibles, flasks, mortars, bellows, tongs, and so on), as well as a good number of books and manuscripts. The friar himself claimed that his objective was none other than that of creating the philosophers’ stone, and also helping meet the needs of the monastery and many other poor churches, who were so lacking in chalices and images made of silver, which he could fashion from base metals such as tin:

“On reading Aristotle and St Thomas ... it did appear to him that it was but a simple task to try and make the philosophers’ stone. If he were successful, so much the better; if not, no matter. For if he were successful he could use it to make, with His Majesty’s approval, some most holy works, such as chalices for poor villages which have only chalices of tin, et multa alia simila.”⁶

The belief in the possibility of creating the philosophers’ stone was shared by most of his contemporaries. It is therefore not surprising that when the friar originally asked that he be allowed to work “some small images in tin or alchemy, and to have cressets and coal and that of which he might have need”,⁷ the prior of the monastery granted his permission

straightaway. Nonetheless, in view of the many hours that Brother Juan spent shut away in his workshop, and faced with a constant stream of silversmiths and alchemists going in and out of the monastery, the prior gradually began to change his mind, until, believing that “he was too much occupied for a monk whose place was in the choir and at the altar ... he asked said brother Juan that he not busy himself with such things”.⁸ At the same time, he ordered the porter to bar the silversmiths and alchemists from the monastery from then onwards.

In spite of this, the friar continued to work on his experiments and to receive visitors, which meant that both he and the brother porter were called before the chapter on more than one occasion. Far from obeying the prior, Brother Juan persisted in asking how he could forbid him from doing something that was “so beneficial to men’s souls and to the monastery of Santa Engracia, which had such need of candlesticks, reliquaries and other things for divine worship”.⁹ In the face of his repeated protests, the prior on one occasion lost his temper, exclaiming that Juan

“should take his leave with the grace of God and with his fool’s silver and goblin’s jewels, or words to that effect.”¹⁰

Not long after this, Brother Juan asked permission to leave the monastery for two weeks and go to the village of Ibdes, situated in the district of Calatayud, 70 miles south-east of Saragossa, and famed for the medicinal properties of its waters. One of his brothers had just died, and his family had asked him to help resolve certain financial matters. His leave of absence from the monastery was, in addition, a much-needed rest cure, given his dreadful state of health. Already advanced in years, like many other alchemists he suffered with his chest because of all the fumes he had inhaled over the years:

“Because of his failing health and great concern about his chest ... he sent word to his Father General to ask leave to go and help divide and sell the aforementioned estate as required, and also take some time to convalesce from the ill health that had been plaguing him, for there he could be cared for by his sister, and take the waters and other remedies in order to recover.”¹¹

The prior raised no objections to his request and, on 30 April 1593, Brother Juan left the monastery, reaching Ibdes two days later, to be welcomed warmly by his close family. He had brought with him all the instruments he needed to set up his workshop on a balcony of his sister’s

house. According to some witnesses, he spent a good part of his two-week stay working there, until, just one day before he was due to return to the monastery, both he and his family were arrested, accused of being “false money-makers”.¹²

The monastery as refuge

No more is known about the fate of the friar’s family. By contrast, an extraordinary amount of information about Brother Juan himself has survived. Because he belonged to the Hieronymite order, he was exempt from jurisdiction, both secular and ecclesiastical. However, given the significance of the accusation, an exception was made, by order of the King, who commanded the papal nuncio in Spain to charge the archbishop of Saragossa with bringing the friar to trial.¹³ The details of this lengthy court case, which took three years to unfold, have survived till the present day, bound in two thick folio volumes which run to a total of 1570 pages.

The prolific investigations that were carried out during those years were directed at discovering whether or not the accusation levelled at the monk were true, so that if it were, he could be suitably punished. In this case, however, determining the truth or otherwise of the accusation had wider implications than the resolution of one particular lawsuit. Not only was it a matter of deciding whether or not the accused had fabricated adulterated coins: the friar’s intentions, and to some extent also the function, meaning and scope of alchemy itself were all going to be involved and called into question.

Counterfeiting money was considered one of the worst crimes possible, comparable even to that of high treason. While it is true that fraud in any guise was seen as a form of disloyalty, those who went as far as to forge money were liable to be accused of questioning the divine authority of the king, who, as God’s representative on earth, held the monopoly over all coins issued. Indeed they were thought to pose a threat to State sovereignty and to society as a whole, since their actions effectively undermined public confidence in commerce, by falsifying the value of the principal means of exchange. Counterfeiting, therefore, was seen as an offence of both divine and human lese-majesty and, given its dual nature, as both a sin and a crime, became a matter of “mixed jurisdiction”, to be tried by both the spiritual and temporal courts.¹⁴

Throughout Europe, monetary law assumed increasing importance from the late Middle Ages onwards, and in particular with the formation of the so-called modern States. In comparison with today, it was, after all, still a relatively easy task in the late sixteenth century to make counterfeit

money, given that the manufacture of legitimate coinage remained fairly rudimentary. The need to counter this and the fear of a proliferation of forgery explain the extreme seriousness with which the crime was regarded. The Fueros of Aragón, for example, expressly forbid both the inquisitorial system and the use of torture, except in cases of the most “atrocious” crimes.¹⁵ Tellingly, the latter included banditry, witchcraft and counterfeiting money; those who committed such crimes were seen as truly nefarious and thus deserving of the death penalty, in its quickest and most effective form. Where the malefactors were members of the clergy, the usual procedure was first of all to apply the penalty of degradation, by which the guilty parties were stripped of any benefits they might previously have enjoyed by virtue of their office.¹⁶

Given the gravity of the crime of which Brother Juan was accused, it was felt necessary that his case be competently investigated, regardless of the privilege of legal exemption.¹⁷ From the beginning there was complete acquiescence on the part of both temporal and spiritual powers, as embodied by Philip II and the papal nuncio, representative in Spain of his holiness Clement II. Fortunately for the accused, the solemn nature of the process and the gravity of the offence did not prevent his case from being investigated with admirable impartiality and benevolence, while fortunately for us, the questioning of witnesses and all other inquiries were carried out with scrupulous attention to detail.

Before broaching the key strands that form the fabric of this case, it is worth saying something about the time and place in which it unfolded. Two apparent coincidences are particularly telling. Firstly, the case opened in 1593, the same year which saw the publication of the Stanyhurst tract designed to enable the distinction between fraudulent and genuine alchemists. Secondly, most of the accused’s alchemical operations had been carried out within the confines of a Hieronymite monastery which attracted a good number of alchemist visitors, as did the monastery of El Escorial, also at that time part of the Order of St Jerome.¹⁸

It must be remembered that, despite the rise of the universities, in late-sixteenth-century Spain the monasteries were still highly influential as centres not only of religious worship but also of culture in a much broader sense. The St Laurence monastery at El Escorial constituted a case apart, having been chosen by Philip II as his residence and thereby becoming a holy site *par excellence*. This status was augmented by its considerable collection of relics, a collection which the king himself strove personally to improve.¹⁹ Both the El Escorial monastery and the Santa Engracia in Saragossa were dedicated to famous martyrs of the Apostolic Age.²⁰ Much of the fame of the Santa Engracia monastery was due to the frequent

miracles attributed not so much to the saint herself as to the “innumerable martyrs” buried beneath the monastery. In the early Christian era Saragossa had been the focus of one of the Emperor Diocletian’s most brutal campaigns of persecution, and the remains of his victims had been laid to rest in the monastery crypt.²¹

As well as being Spain’s two principal reliquaries and hence sharing a certain aura of sacredness, the two monasteries had much else in common, given that they belonged to the same order and many close links had been forged between them over the years. One of the most avowedly enthusiastic admirers of the Santa Engracia monastery was Brother José de Sigüenza. Although he was never a member of the monastic community there, he clearly knew the place well. His *History of the Order of St Jerome* included a detailed description of it: “a sanctuary that is so large and of such devotion that ... it all but equals Rome”. According to Sigüenza, Santa Engracia was remarkable not only for its size, but for its exceptional setting, “facing the south” and on the bank of “a wide river, called the Huerva”.²²

Thanks to generous donations made by the last two rulers of the Crown of Aragón and the continuing support of the early Habsburg monarchs, the monastic complex was renowned for its size and its wealth.²³ As well as the church itself, and the famous crypt, there were also three large cloisters, a refectory, a lodging house, a library, an infirmary, an apothecary’s, a wine cellar, a chapel and even a farm. Not to mention of course the individual monastic cells characteristic of the Hieronymites, where the monks would sleep and pray in solitude, in memory of their Order’s reclusive origins.²⁴ Of all the monastery buildings, Sigüenza reserved particular praise for a tall and beautiful tower, from the roof of which could be spied “a broad and tranquil view” of the entire city.²⁵

This then, was the seemingly ideal place in which Brother Juan de Santa Ana was to spend two years working with fortitude and zeal on his own personal quest to find the philosophers’ stone. From the dates given in the documentation relating to the case brought by the Archbishop of Saragossa, it is clear that the elderly monk entered the monastery in 1591, having come from San Bartolomé de Lupiana (Guadalajara). While the reason behind his move is unknown, what is certain is that he was treated with great deference and respect in his new home, even when suspicions began to grow about his activities there. Some of his fellow friars did think that Brother Juan might be making counterfeit money, but “they had not dared communicate this to anyone so as not to fall victim to the penalties established by their religion, according to which, any man who said

something about another and could not prove it to be true, would himself be subject to punishment.”²⁶

The monastery environment could not, therefore, have been more favourable for Brother Juan. Not only did he have at his disposal a quiet, comfortable place where he could have the isolation and concentration he required, but he was also safeguarded against any ill-intentioned accusations. It represented a refuge for him, a place to work free from the threat of potential legal action. Nevertheless, life was not all sweetness and light. In spite of the monastery’s famed wealth and splendour, there is evidence that between 1591 and 1593, the very years in which Brother Juan was establishing himself there, it went through a period of severe financial privation, which had both material and psychological repercussions for its residents. In a work he wrote in the eighteenth century about the history of Santa Engracia, Brother León Benito Martón mentions the “anxiety” and “disturbances” that preceded the arrival of much-needed financial assistance.²⁷

If a generalised economic crisis had such a significant effect on a monastery generously funded by royal revenues, ecclesiastical benefices and alms, far more serious was its impact on many rural areas. As will be seen, the reduced circumstances of Brother Juan’s family had a decisive part to play in the way events unfolded. Most of the conflicts and clashes that characterised this period were rooted in the day-to-day hardships endured by those involved, and what lay behind the case brought against this friar was a dispute between neighbours and a desire for revenge. According to the evidence given by one of the witnesses called by the prosecution, Brother Juan’s immediate family were living in abject poverty, on the verge of starvation:

“The said Martín Lozano and Gerónima Rubio and their children were living in extreme need and poverty before the said Brother Juan de Santa Ana came to their home, and did not even have enough money to buy half a *cahíz* of wheat, until the said Brother Juan de Santa Ana arrived in the village of Ibdes ... when they did buy one *cahíz* of wheat. And this witness did hear the wife of Miguel Ybañez, known as la Romera, say that she had lent them two or three sievesful of flour two days before the arrival of said Brother Juan de Santa Ana, and that they were dying of hunger.”²⁸

In drawing up the complaint against Brother Juan, the king’s prosecutor in the kingdom of Aragón, was of course bound to use this information to his advantage by connecting it to the serious crime of which the monk stood accused. The criminal charges laid against him stated that his family was living in penury, and that this was why he had devoted

several years “to making false money ... although he claimed he was trying to make images and objects for devotional purposes”. Given the “extreme need” in which his relatives found themselves, what Brother Juan wanted to do was “make them very rich”.²⁹

Equivocal quintessence

Somewhere between the dream of achieving great wealth and the abject misery that justified the crime, however, there lay some middle ground. Similarly, between the prosecutor’s materialistic interpretation of the accused’s activities and the monk’s defence of his alchemical-spiritual ideals, there opened up a wide horizon of uncertainty and ambiguity. Whether or not it was true that Brother Juan had managed to forge – or had tried to obtain – sufficient funds to rescue his needy family, if one thing becomes clear from reading the hundreds of pages devoted to investigating his case, it is that even if he had, making money was not his only objective. According to the friar, he had limited himself in the short term to creating sacred images in silver, but his real goal was to discover the secret of quintessence, or the philosophers’ stone. His method was to keep purifying one metal after another, applying “medicines” to each of them, hoping little by little to achieve perfection. No recipe was to be discounted – Brother Juan put to the test anything that came to his notice, as can be seen from the summary of his second interrogation:

“He has collected all recipes that have come into his possession, and what he is trying to purify is copper or bronze or mercury by mixing them with silver; he is not doing this to make false silver, but to discover more about the purification of such metals and to make projection of the mineral stone in that purification which would seem better among these purifications”³⁰

The philosophy on which the monk based his experiments had guided many alchemists before him.³¹ The fundamental idea was that every element tended towards perfection, but given that nature’s rhythms move at such a slow pace, what alchemy sought to do was to reduce the time normally required by each element to reach its respective level of purity by as much as possible.³² This meant searching for an appropriate catalyst, an agent capable of speeding nature along: a kind of “medicine” that would accelerate the purification process and convert the original metal more rapidly into pure silver or gold, both materially and symbolically. This agent was identified with the mythical philosophers’ stone, also known as quintessence, the elixir of life, universal panacea, and so on.

Spiritual interpretations of alchemy assumed that the discovery of such a substance was only within the reach of a few wise men who, as they were striving to perfect the outside world, would also purify their own souls, the refinement of the metal thereby being mirrored by the inner purging of those practising the art.³³ No such aspiration, however, is mentioned in Brother Juan's assertions or written statements, a fact that supports the scepticism with which some scholars today regard the psychological readings of alchemy which have been in vogue ever since the beginning of the last century. The fact of the matter is that these are nothing but romantic interpretations, far removed from day-to-day reality, and it is no coincidence that they have been developed outside the realm of historical research, in other words, not from the direct observation of actual cases.³⁴

Be this as it may, given the extent of Brother Juan's knowledge, and his skills in purifying metals, the archbishop's representative asked him where he had found all the information he had used to compile his own notebooks full of alchemical procedures and formulae. The accused replied that most of the books that had inspired him when he was composing his own recipes were to be found in the monastery library (which, according to Brother Sigüenza boasted more than two thousand volumes).³⁵ Among them, he highlighted the works of Aristotle, Albertus Magnus and Thomas Aquinas, but above all, a volume that the prior himself had lent him.³⁶ Without doubt, showing that this good and wise man was involved, however marginally, in his experiments, gave Brother Juan the ideal platform from which to launch his defence.³⁷

It must not be forgotten that, despite the suspicions that alchemists' activities aroused in all circles, the principles on which the utopian dream of finding the philosophers' stone rested were intimately related to the beliefs held by a good number of learned and mystical Christians, on whose works the adepts of alchemy claimed to base the legitimacy of their art. There was widespread confusion on the matter, however, since the majority of works on the subject of alchemy then in circulation were attributed to well-respected authors who in fact had had nothing to do with them, a state of affairs that was never questioned. For example, the hugely eminent Albertus Magnus was considered one of the greatest authorities on alchemy in history, despite having never written any alchemical works *per se*. The closest he came to the subject was in his book on minerals (*De mineralibus*), in which he covered their constitution and the possibility of their transmutation, a process he ultimately deemed to be merely apparent or superficial. Even so, Albertus did assert that, of all the arts, alchemy

was that which best imitated nature, at times managing to perfect it, a fact that, in his opinion, earned it a central place in natural philosophy.³⁸

A number of alchemical texts were also attributed to St Thomas Aquinas. Yet although the Angelic Doctor regarded alchemy as a subdivision of natural philosophy, he too explicitly rejected the idea of the transmutation of matter. By contrast, the apocryphal tracts published under his name emphasised that the destiny of all metals was to be converted into gold or silver, as long as they were left in the ground long enough for nature to take its course.³⁹ These and other such tracts, which in Spain were also erroneously attributed to both Ramón Llull⁴⁰ and Arnaldo de Villanova,⁴¹ claimed that transmutation could be artificially effected since, as Aristotle had argued, that which had potentiality could become actuality. Consequently, any object, animal or vegetable, could be reduced to mineral, and ultimately to silver or gold, not only by natural processes, but by human intervention or, in other words, by means of “the art”, in this case, the art of alchemy.

Taking all this into account, it is no wonder that, in his replies to the episcopal judges, Brother Juan acknowledged openly and without any fear whatsoever, that he had been able to fabricate silver:

“Asked if he has ever made the philosophers’ stone, he replied that of the three stones, which are animal, vegetable and mineral, he tried at Christmas just past to make a small quantity of mineral ... and he did fabricate a small tablet ... and it came out as very fine silver.”⁴²

The monk was absolutely convinced that having spent his life in search of the famous stone, and having risked his health, his reputation and a good deal of his own money along the way, he had finally managed to transmute any metal he wanted into silver. This conviction was clearly stated in one of his notebooks, which he had written specifically for his nephew, whom he considered his most direct heir and whom he wanted to teach “clearly and without mystery the hows and whys of making the philosophers’ stone”.⁴³ Among these notes is one particular paragraph which testifies to the satisfaction the monk felt at his achievements:

“I alone in this city of Saragossa have been victorious in making silver. On All Saints’ Eve it was examined in the silversmith’s district and was judged to be good silver ... and no other man has been able to make such good silver as mine.”⁴⁴

Can it be deduced from this confession that, in effect, the friar was guilty as charged? In theory, it was one thing to make “silver” and quite

another to use this “skill” to defraud the public purse by coining one’s own money. In any case, whether because of the intrinsic difficulties of the lawsuit, or because of the episcopal court’s benevolence, the guilt or innocence of the accused was never determined, as shown by the solemn, but above all prudent sentence handed down after three long years⁴⁵. From today’s perspective, the most interesting thing about the story is that there are two completely contradictory versions of the facts. According to the first, Brother Juan was a shrewd counterfeiter who, guided by the need to help his family, had stopped at nothing to achieve his goal. According to the second, meanwhile, he had fallen into the trap of an unscrupulous person, and was completely innocent of the charges laid against him. Whatever the truth of the matter, it is disquieting to follow the development of the two contradictory reports and see how both present an impeccable internal logic.

Hearing the case for the prosecution, one might well be convinced that Brother Juan did indeed fabricate the 53 fake pieces of eight that were found in the little village of Ibdes and became the basis of the legal action taken against him. Hearing the case for the defence, however, one might be equally tempted to clear him of all charges, on discovering the resentment that had built up towards the accused and his family. It appears that the man who made the initial allegations was a “declared enemy” of the husband of Brother Juan’s sister, which led him to act with “the greatest rancour and ill will” towards him and his family, including the friar.⁴⁶ The animosity between the two men went back many years, and had something to do with the monk’s brother-in-law having raised objections at various council meetings to the leasing of a mill, thereby damaging the interests of the other man. The lawyer for the defence stated that the latter’s desire for revenge had led him to use any means he could to ruin his opponent.

From here on in, like a game of mirrors, the defence arguments turned once more on the concept of falsity. Forming a perfect symmetry with the original accusation of falsification, the counter-arguments put forward by the friar’s lawyer claimed that this was a “false tale” full of “malice”, and that to create it the prosecutor had made use of “false witnesses” and “false depositions”. Taking the same tack as those who wanted to distinguish between genuine and fraudulent alchemists, the defence was undermining the credibility of the prosecution witnesses by claiming that the immoral nature of their lives and conduct lent nothing but falsity to their statements.

This being a case against a “false money-maker”, other more tangible pieces of evidence were presented to substantiate the friar’s “innocence”.

Here the testimony of several silversmiths is telling, since it gives us some insight not only into certain specific aspects of the case, but also into the extent to which intervention in the natural world was considered acceptable at the time. Most of the smiths questioned stated that Brother Juan had not been able to make coins with the instruments he possessed, but had been able to produce “legitimate silver” or, at least, what was accepted as such.

The operations carried out by alchemists, with their aim of imitating, completing and even competing with creation itself, highlighted more than any other human activity the eternal debate between art and nature: to what extent could nature be perfected by man? To what extent was their art, something artificial, simply a diabolical deception, a crude imitation of the divine?⁴⁷ If there is any conclusion to be drawn from this trial, it is that no clear distinction can be made between “true” alchemy (associated with the monk’s idealism) and “false” alchemy (based on his desire for material gain): the two go together, inseparable from his personality and his circumstances. Brother Juan’s alchemy was no spiritual discipline in pursuit of an unobtainable ideal, nor, on the contrary, was it an absurd chimera, based on superstitious beliefs. And it would be an even greater error to classify it as deliberate deception or simple fraud, bearing in mind the monk’s unceasing dedication to his experiments, his intense inner conviction and his undoubted interest in the theoretical aspects of the art.

Brother Juan’s alchemy united an unshakeable faith in the possibility of playing a part in the work of the divine with the no less persistent task of increasing the wealth of his heirs. The two facets were mutually compatible as far as he was concerned, and failed to cause him the slightest prick of conscience. Sure of his ability to enrich his impoverished family, the monk referred in one of his notebooks to the “great profit of this multiplication”,⁴⁸ in other words, to the possibility of doubling each day the riches achieved the day before. In a prime example of counting one’s chickens before they have hatched, Brother Juan daydreamed and passed on his fantasies to his nephew, explaining to him how in less than a month, one hundred reals could be turned, following a strict mathematical progression, into six hundred and seventy-eight thousand four hundred, as long as the silver made could be sold at the necessary rate.⁴⁹

In all likelihood, Brother Juan never actually fabricated any coins himself, but he did try and obtain as much money as he could, even if this was ultimately for the benefit of others and not himself. Knowing that his skill should be kept secret, in one of his notebooks he addressed his nephew as follows:

“There is a risk that someone may accuse you before the governor of the land or kingdom where you are. And although in doing this there is no sin, nor would they punish you, since all men are at liberty to do as they please with what is theirs alone, and in my home I may make whatever it please me to make as long as it is not money, since that might harm the king and even the republic ... to prevent this: try and have ... some moulds for spoons, or for some other thing, in which you can cast ready-made pieces, for by selling your silver in a ready-made piece, you conceal the fact that you yourself have made it.”⁵⁰

The idea that a man may do as he pleases with his own property, regardless of outside influences such as the law, is of course, a view of personal liberty that continues to be controversial today. In the late-sixteenth century, converting base metals into “sterling silver” using the art of alchemy was still possible, if risky. Whatever the true extent of his guilt or innocence, therefore, and whether his actions were sinful or not, Brother Juan’s experiments clearly exemplify the ambiguous and obscure nature of the work of many alchemists of the time; men who, like him, were motivated by the desire both to uncover the secret of the philosophers’ stone and to find a way out of their own financial hardship.

Notes

¹ Trial of Brother Juan de Santa Ana (Saragossa, 1593-1596), Archivo Diocesano de Zaragoza (ADZ), S/C, vol. I, fol. 264r.

² Outside Spain, some of the best literary depictions of false alchemists are to be found in Chaucer’s *Canterbury Tales* (“The Canon’s Yeoman’s Tale”, c.1380) and Ben Jonson’s *The Alchemist* (c.1610). One famous tale in Spanish literature appears in Exemplum XX of Don Juan Manuel’s *El conde Lucanor* (1330-1335), entitled “What happened to a king with a man who said that he would perform alchemy for him”, in which the king is duped by a cunning trickster. There are also many mentions of false alchemists in Spanish law (e.g. *Las Partidas*, VII, 7), as well as Spanish treatises against the deceptions of alchemy (*Engaños de la alquimia, Contra los alquimistas*, etc.). See John Read, *Through Alchemy to Chemistry* (London: G. Bell & Sons, 1957); Juan García Font, *Historia de la alquimia en España* (Barcelona: MRA, 1995); Sagrario Muñoz Calvo, *Inquisición y ciencia en la España moderna* (Madrid: Editora Nacional, 1977); and Julio Caro Baroja, *Jardín de flores raras* (Barcelona: Seix Barral, 1993), 67-88.

³ Although the Latin “*arcanum*” means “secret” in a broad sense, in the world of alchemy it was understood to mean the “secret knowledge” associated with the procedures of the art. Hence the language of alchemists was frequently labelled “arcane language”, and alchemy in general the “arcane discipline”. Maurice P. Crosland, *Historical Studies in the Language of Chemistry* (London, Heinemann, 1962), 101.

⁴ For more on the so-called “secrets of nature” and their links with alchemy, see William Eamon, *Science and the Secrets of Nature. Books of Secrets in Medieval and Early Modern Culture* (Princeton: Princeton University Press, 1994) and *Secrets of Nature: Astrology and Alchemy in Early Modern Europe*, ed. William R. Newman and Anthony Grafton (Cambridge (Massachusetts): The MIT Press, 2001).

⁵ Biblioteca Nacional de Madrid (BN), Ms. 2058, 95. Vol. V, fols. 248r- 257v. A complete transcript of the treatise can be found in María Tausiet, “El toque de alquimia: un método casi infalible dedicado a Felipe II por Richard Stanyhurst”, in *La ciencia en el Monasterio del Escorial*, ed. Francisco Javier Campos and Fernández de Sevilla (San Lorenzo del Escorial: EDES, 1994), 525-558.

⁶ Trial of Brother Juan de Santa Ana, vol. I, fol. 60.

⁷ *Ibid.*, fol. 263v.

⁸ *Ibid.*

⁹ *Ibid.*, fol. 264r.

¹⁰ *Ibid.*

¹¹ Trial of Brother Juan de Santa Ana, vol. II, fol. 21r.

¹² On 16 May 1593 the judges of Calatayud gave the order for Brother Juan de Santa Ana and his family to be arrested. Thereafter, two sets of court proceedings were initiated by the secular authorities: one against “Martin Lozano et aliorum” and the other against the friar. No documentary evidence of either has survived. On 10 July of the same year, the trial of Brother Juan was transferred to the episcopal court. From the case brought by the vicar of the archbishop of Saragossa, there survives the initial “criminal complaint filed by His Majesty’s procurator fiscal”.

¹³ The following observation was added after the 44 articles of the accusation filed by “His Majesty’s procurator”, Antonio Pérez Godino: “Given that, as a professed friar of the order and rule of St Jerome, the said Brother Joan de Santa Anna is exempt from ecclesiastical and secular jurisdiction, and in order that such serious crimes as those specified above and committed by him do not remain unpunished, by order of and at the instance of his Majesty Our Lord King, the most illustrious and reverend Nuncio of his Holiness who dwells in the Kingdoms of Spain charged the said most illustrious Lord Archbishop of Saragossa, and thus Your Worship, the said Lord Vicar General, with the investigation and punishment of said crimes and misdeeds, by means of a brief and supplication enclosed therein, which has been presented to Your Worship, the said Lord Vicar General, and has been accepted by Your Worship and, on petition of the said procurator fiscal, Your Worship has ordered that the said Brother Joan de Santa Anna be arrested, and he is now being held prisoner in the archiepiscopal prison of this city...” (Trial of Brother Juan, vol. I, fols. 34r. and v.).

¹⁴ Francisco Tomás y Valiente, *El derecho penal de la monarquía absoluta (siglos XVI, XVII y XVIII)* (Madrid: Tecnos, 1992), 271; Thomas Württemberg, “Un aspecto de la historia de falsificación de moneda”, *Anuario de Derecho Penal y Ciencias Penales*, 10 (1957): 159 ff., and Jaime Lluís y Navas, “La falsificación de moneda ante el ‘Corpus Juris Canonici’”, *Numisma*, XIII-62 (1963): 19-44.

¹⁵ Pascual Savall and Santiago Penen, *Fueros, observancias y actos de corte del reino de Aragón*, (Zaragoza: Imprenta de Castro y Bosque, 1886).

¹⁶ Jaime Lluís y Navas-Brusi, “La falsificación de moneda ante los Fueros y Observancias de Aragón”, *Numisma*, V-22 (1956): 63-86.

¹⁷ José Antonio Ruiz Hernando, *Los monasterios jerónimos españoles* (Segovia: Caja de Segovia, 1997), and Francisco Javier Campos y Fernández de Sevilla, ed., *La Orden de San Jerónimo y sus Monasterios* (San Lorenzo de El Escorial: EDES, 1999).

¹⁸ Francisco Javier Campos y Fernández de Sevilla, ed., *La ciencia en el Monasterio del Escorial*, and José Rodríguez Guerrero and Pedro Rojas García, “La *Chymica* de Richard Stanihurst en la Corte de Felipe II”, *Azogue*, 4 (2001), <http://come.to/azogue>

¹⁹ “The most prudent monarch had obtained permission, privileges and briefs from the Supreme Pontiffs to remove by the most legal and holy means possible from all German lands, relics of all saints of any church or monastery that might wish to condescend to his petitions, and relics of any size or dimension, even the entire bodies of saints ... because many such were not venerated with due respect in the places where they lay, and because they ran the danger of falling into the hands of heretics, who, like so many enemies of God, wage bloody war on his saints”, in Brother José de Sigüenza, *La fundación del Monasterio del Escorial* (Madrid: Aguilar, 1988 [¹1605]), 236-238.

²⁰ Some academics, in view of the ongoing reappraisal of the early martyrs’ suffering and the intense cult of relics observed in the Early Modern Era, especially from the late sixteenth to mid seventeenth century, have classified this period as “the golden age of martyrology”. Trevor Johnson, “Holy Fabrications: The Catacomb Saints and the Counter-Reformation in Bavaria”, *Journal of Ecclesiastical History*, 47-2 (1996): 280, and Simon Ditchfield, “Martyrs on the move: relics as vindicators of local diversity in the Tridentine Church”, in *Martyrs and Martyrologies*, ed. Diana Wood, *Studies in Church History*, XXX (1993). 283-294.

²¹ Maria Tausiet, “Zaragoza celeste y subterránea: geografía mítica de una ciudad (ss. XV-XVIII)”, in *L’imaginaire du territoire en Espagne et au Portugal (XVI^e-XVII^e siècles)*, in François Delpech, ed., (Madrid : Casa de Velázquez, 2008), 141-70.

²² Brother José de Sigüenza, *La fundación del Monasterio del Escorial*, 62.

²³ Juan Domínguez Lasierra, “El Monasterio de Santa Engracia de Zaragoza: el asombro de los viajeros”, *Aragonia Sacra* VII-VIII (1992-1993): 161-72.

²⁴ José Antonio Ruiz Hernando, *Los monasterios jerónimos españoles*, 35.

²⁵ Brother José de Sigüenza, *La fundación del Monasterio del Escorial*, 65.

²⁶ Trial of Brother Juan, fol. 256r.

²⁷ León Benito Martón, *Origen y antigüedades de el subterraneo y celeberrimo santuario de Santa Maria de las Santas Masas, oy Real Monasterio de Santa Engracia de Zaragoza* (Zaragoza: Juan Malo, 1737), 573. It has to be remembered that from May 1591 onwards Saragossa witnessed violent uprisings and disturbances when the Inquisition sentenced Antonio Pérez to imprisonment, an act seen as interfering with and lacking in respect for the Aragonesse Fueros. Jesús

Gascón Pérez, *Bibliografía crítica para el estudio de la rebelión aragonesa de 1591* (Zaragoza: Centro de Documentación Bibliográfica Aragonesa, 1995).

²⁸ Trial of Brother Juan, vol. I, fol. 112r. A *cahíz* was a unit of measure for wheat widely used in Aragón during this period.

²⁹ *Ibid.*, fols. 24 and 25r.

³⁰ *Ibid.* fol. 62r.

³¹ Alexandre Koyré, *Mystiques, spirituels, alchimistes du XVI siècle allemand* (Schwenckfeld, Franck, Weigel, Paracelse) (Paris: Armand Colin, 1971) and Bruce T. Moran, *Distilling Knowledge. Alchemy, Chemistry, and the Scientific Revolution* (Cambridge (Massachusetts): Harvard University Press, 2005).

³² Michael Maier, writing in 1617, held that “Nature’s time is extremely long, and the fashion of her concoction is uniform, and her fire very slow. That of Art, on the other hand, is short; the heating is controlled by the wit of the artist, as the fire also is made intenser or milder.” (John Read, *Through Alchemy to Chemistry*, 34).

³³ Carl Gustav Jung, “Psychology and Alchemy. Introduction to the religious and psychological problems of alchemy”, in *Collected Works of Carl Gustav Jung*, vol. 12, (Princeton: Princeton University Press, 1944), 1-37, and Mircea Eliade, *Forgerons et alchimistes* (Paris: Flammarion, 1977).

³⁴ The spiritual interpretation of alchemy, by both Jung and Eliade (which continues to enjoy enormous popularity, as well as acceptance, in many academic circles today), has to be seen within the context of an idealised occultism, so attractive to the Victorians, which tended to consider alchemy from an essentialist viewpoint, as if it were something constant and uniform throughout history. Lawrence M. Principe and William R. Newman, “Some Problems with the Historiography of Alchemy”, in *Secrets of Nature: Astrology and Alchemy in Early Modern Europe*, ed. William R. Newman and Anthony Grafton, 385-431.

³⁵ According to Sigüenza, the monastery library was very large (“one hundred and fifty-six feet long and forty-two feet wide”) and well-lit, and held “more than two thousand well-made books in all disciplines” (Brother José de Sigüenza, *La fundación del Monasterio del Escorial*, 64).

³⁶ Trial of Brother Juan, vol. I, fol. 70v. The book in question, written by “a philosopher named Doctor Cuadramo”, was entitled, according to Brother Juan, “De secretis naturae, maxime de mineralibus” (see the trial proceedings, vol. I, fol. 105r.). In all likelihood, this was one of the many versions of Albertus Magnus’s *De mineralibus* which, under that or other similar titles, were in circulation at the time, as part of what has become known as the Pseudo-Albertus tradition. William Eamon, *Science and the Secrets of Nature. Books of Secrets in Medieval and Early Modern Culture*, 71-73.

³⁷ According to León Benito Martón, the prior, Father Juan Vaguer, possessed a “rare humility”, together with exceptional wisdom and the gift of prophecy, and knew always how to combine “learning with virtuousness” (León Benito Martón, *Origen y antigüedades de el subterráneo y celeberrimo santuario de Santa María de las Santas Masas, oy Real Monasterio de Santa Engracia de Zaragoza*, 572).

³⁸ Robert Halleux, “Albert le Grand et l’alchimie”, *Revue des sciences philosophiques et théologiques*, 66 (1982) : 57-80.

³⁹ Robert Halleux, *Les textes alchimiques* (Turnhout: Brepols Publishers, 1979), and William R. Newman, "Technology and Alchemical debate in the Late Middle Ages", *Isis*, 80 (1989): 423-55.

⁴⁰ Michela Pereira, *The alchemical corpus attributed to Raymund Lull* (London: Warburg Institute, 1989), and idem, *L'oro dei filosofi. Saggio sulle idee di un alchimista del Trecento*, (Spoleto: Centro italiano di studi sull'Alto Medioevo, 1992).

⁴¹ Sebastià Giralt, "El mite d'Arnau de Vilanova, de l'Edad Mitjana al Renaixement", *Estudi General*, 23-24 (2003-2004): 127-142; idem, "Un alquimista medieval per als temps moderns: les edicions del corpus alquímic atribuït a Arnau de Vilanova en llur context (c. 1477-1754)", in *Actes de la II Trobada Internacional d'Estudis sobre Arnau de Vilanova*, Josep Perarnau ed. (Barcelona, Institut d'Estudis Catalans, 2005): 61-128.

⁴² Trial of Brother Juan, vol. I, fol. 73r.

⁴³ Idem, ibidem, fol. 455r.

⁴⁴ Idem, ibidem, fol. 467v.

⁴⁵ The sentence passed on 4 May 1596 read as follows: "Christi Nomine Invocato ... We do pass judgement that the said procurator fiscal did not prove his intention as he should have done in order to impose on the said accused the ordinary penalty as laid down in the law against those who fabricate false coins ... But, bearing in mind that of the charge laid against him and of what has been proved against him, much points to the fact that he committed the crime of which he stands accused, despite the defence he has given, for which we could impose serious penalties, but showing him mercy on account of his advanced years and considering that he has been a prisoner for almost two years, we sentence him to two more years of imprisonment, to be spent either in the monastery where he took orders, or at another monastery determined by the Most Reverend Father General of his Order. And that, those two years having passed, he may not leave the grounds and enclosure of said monastery. And we do deprive him of active and passive voice, and he may not hold any office within his order for the rest of his life, nor may he have in his cell any tool or implement with which to perform alchemy or other form of smelting. And that during all his time in prison, as well as the office and divine hours to which he is already obliged, every Monday he is to say the Office of the Dead, and every Wednesday the Matins Canticle, and every Saturday the Office of Our Lady. And we order him to pay costs in the amount that we determine." (See trial proceedings, vol. II, fols. 14v and 15r).

⁴⁶ Trial of Brother Juan, vol. II, fols. 50ff.

⁴⁷ William R. Newman, *Promethean Ambitions. Alchemy and the Quest to Perfect Nature* (London-Chicago: The University of Chicago Press, 2004). Pamela H. Smith, *The Business of Alchemy. Science and Culture in the Holy Roman Empire* (Princeton: Princeton University Press, 1994). Tara Nummedal, *Alchemy and Authority in the Holy Roman Empire* (Chicago- London: The University of Chicago Press, 2007), and Stanton J. Linden ed., *The Alchemy Reader: From Hermes Trismegistus to Isaac Newton* (New York: Cambridge University Press, 2003).

⁴⁸ Chapter 9 of the *fourth notebook*, dedicated by the friar to his nephew, was entitled “On the great profit of this multiplication”. Trial of Brother Juan, vol. I, fol. 469r.

⁴⁹ Brother Juan was keen for his nephew to know of his conviction that the money acquired one day could be doubled the next, a mathematical pattern he expressed somewhat poetically, as follows: “Pay close heed: You begin on the first day of the week with riches of one hundred reals, and you make a projection of the Moon on to Venus and you will go to bed with two hundred. On Tuesday you awake with two hundred and by the end of the day will have four hundred. On Wednesday you begin with four hundred and by the time you dine have eight hundred. On Thursday at dawn you have six hundred [sic] and lie down to rest that night with three thousand two hundred. On Saturday you awake with three thousand two hundred, and go to sleep with six thousand four hundred...” Trial of Brother Juan, vol. I, fol. 469v

⁵⁰ Trial of Brother Juan, vol. I, fol. 468r.

BEYOND PATRONAGE: MICHAEL SENDIVOGIUS AND THE MEANINGS OF SUCCESS IN ALCHEMY

RAFAŁ T. PRINKE,
AKADEMIA WYCHOWANIA FIZYCZNEGO, POZNAŃ, POLAND

The turn of the 16th and 17th centuries, so important in many other respects, also witnessed the appearance of a new genre of writing – histories of successful transmutations.¹ These accounts treated of mysterious adepts who appeared at various places in Europe and tried to convince unbelievers of the truth of the alchemical art. Rather than using logic and scholastic argumentation, as was the case with their medieval predecessors, they used the proof of the senses and practical experiment. Because in most of the stories the adepts are either anonymous or bear otherwise unknown names, their usefulness for reconstructing factual history is highly questionable but they may shed valuable light on the popular mythology of alchemical transmutation and the archetypal figure of a “successful alchemist.” Interestingly, few histories of transmutations (the legend of Nicolas Flamel being an outstanding exception) inform us about adepts who improved their material situation and raised their social status, as if it were of little importance to the mentality of the period. On the other hand, however, there are numerous tales of unsuccessful alchemists who lost all their fortunes and died in poverty or were tortured and hanged by their wealthy patrons, to whom they had promised great riches. The two genres represent two attitudes towards alchemy and should thus be treated as rhetorical devices rather than records of historical facts. Unfortunately, scarcity of primary sources often tempted historians of alchemy to accept some elements of those stories, so that they incorporated them into their narratives and created ever new mutations of the myths.

From the historical perspective a successful alchemist obviously cannot be defined as the one who succeeded in performing transmutations, because modern science tells us it was impossible. But the success may also be considered in terms of his economic and social career, the

intellectual influence on later generations, as well as the number of unconfirmed legends circulated about the adept, both during his lifetime and in modern scholarly writings. In order to discuss those various aspects of career in alchemy meaningfully, it would be helpful to have a conceptual framework of reference. Such framework was supplied by Tara Nummedal in her recent book where she proposed to look at the traditional figure of the alchemist as containing three sub-types or *personae*, which may manifest in various proportions in a particular instance of a real-life alchemist.² Different criteria of success may thus be applied to different *personae*:

- 1) *Betrüger*-fraud-criminal – public transmutations, lasting “true adept” legend.
- 2) Philosopher-scholar-prophet – influential writings, lasting authority.
- 3) Entrepreneur-artisan-laborant – rich patrons, lasting prosperity.

A universal criterion of success, not limited to alchemists but also applicable to them, is that of gaining financial independence (which typically meant becoming an owner of real estate generating regular income) and thus eliminating the need to rely on patronage. In the feudal society of Early Modern Central Europe one was either born into such independence (inheriting it from his ancestors) or had to try really hard because there were many legal restrictions. In order to be able to buy land or houses, one had to be a citizen of the kingdom (which required the status of a nobleman) or of a given city (which was usually granted only to burghers from other towns). The upward social mobility within the same class was possible through marriage, so a lesser nobleman could marry into a more powerful family or a journeyman could marry his master craftsman’s daughter and inherit his workshop. But inter-class marriages were very rare and discouraged, in some countries even by legal regulations.³ There were certainly much greater chances of marrying a wealthy widow than an unmarried girl, because the former was able to decide about herself (though with some restrictions), while the latter was absolutely dependant on the will of her father or legal guardians.

The final touchstone test of a successful alchemist, however, would be his ability to survive. The vast majority of those pursuing the alchemical career followed the same path, beginning with enthusiasm (either genuine or fraudulent), then finding a rich and interested patron, and ending in poverty or on the gallows. There was a very popular “definition” of alchemy quoted in many variants by 17th century authors. The late version

mentioned by Johann Georg Keyßler in 1751 calls alchemy *ars sine arte, cujus principium est cupere, medium mentiri, et finis mendicare vel patibulari*.⁴ Earlier versions were known to Werner Rolfinck in 1661 (*ars sine arte, cujus scire est pars cum parte, medium strenue mentiri, finis mendicatum ire, vel in patibulo superbire*), Joseph Hall in 1605 (the same without the last verse), and Andrea Libavius in 1599,⁵ who says he read it somewhere and begins it with *scientia sine arte*, which makes more sense and links back to the famous discussion of the architect Jean Mignot from Paris and the local master builders in Milan that took place in the 1390's.⁶ The phrase *ars sine arte*, on the other hand, was famously used by Julius Caesar Scaliger in his *Poetices* of 1561 to describe Horace's poetry.

Hermann Kopp quotes a version with the same opening phrase which he attributes to Jacob Gretser (1562-1625), an important Jesuit theologian and playwright from Ingolstadt, and dates it to about 1600 but does not indicate which of the many publications of Gretser contains it.⁷ He does not seem to have been the original author, however, as his version is specifically aimed against Paracelsians:

Alchemia est scientia sine arte,
Cujus principium est pars cum parte,
Medium: strenue mentiri,
Finis: mendicatum ire
Vel in cruce corvos nutrire,
Quod Paracelsicis solet evenire...

According to Kopp, the poem continues in similar spirit but I have not been able to locate the original. A somewhat similar but different extended version can be found in Johann Valentin Andreae's comedy *Turbo* of 1616.⁸

Illa [alchemia] est ars sine arte
Cuius summa: pars sine parte
Cuius vera sunt nugari
Cuius mater otari
Cuius votum denigrari
Cuius fama annotari
Cuius proba est mentiri
Cuius via impedi
Cuius labor est inflare
Cuius fructus mendicare
Cuius finis desperare
Cuius merces nusquam stare
Cuius poena est perire

Et in cruce interire.

This version was also published with some minor modifications by Andreae's "Rosicrucian" friend and former teacher Christoph Besold (1577-1638) in 1615⁹ and by the important economic theorist and encyclopedist Jakob Bornitz (c1560-1625) in 1625.¹⁰

The popularity of that poem in its various mutations certainly suggests that such view of the alchemical career was quite widespread in the 16th and 17th centuries. It can be further confirmed by numerous stories (both true and invented) of individual alchemists who either spent all their possessions on alchemy and died in poverty or were found to be frauds and ended on the gallows. Another fate awaiting unsuccessful alchemists was alcoholism, not recognized as a disease so rarely mentioned in popular accounts. One of the victims of that addiction was Ludvík Korálek of Těšín, a wealthy merchant of Prague, who had a sizable library of alchemical books and his own laboratory (with a full time laborant), and became the patron of a circle of alchemists living in Prague, including Václav Lavín of Ottenfeld,¹¹ Jan Kapr z Kaprštejn,¹² Oswald Croll, Michael Sendivogius, and others. But when all his attempts at making the Philosopher's Stone were unsuccessful, he felt so depressed that he took to drinking and, as can be judged from the surviving description of his symptoms, became an alcoholic. In 1599 both Croll and Sendivogius tried to cure him, first advising not to drink so much heavy wine and then, when the advice had not been taken, administering special medicines. Interestingly, Croll as a spagyrist treated Korálek with *extractionem et solutionem perlarum et corallorum* (and one wonders if the patient's surname was recognized as a *signatura*), while Sendivogius, being an alchemist proper, prescribed *summam et universalem medicinam*, with which he had successfully cured others, as certified by Croll himself.¹³ Unfortunately, neither treatment worked and Korálek died soon afterwards.

Faced with such well documented cases of failure in alchemy, popular opinion about alchemists, and presentist perspective on the possibility of metallic transmutations, one should conclude that a "successful alchemist" is but an oxymoron. Before accepting such conclusion, however, the three *personae* of the alchemist may be considered again. Someone who performed public transmutations (which must be assumed a fraud), published highly regarded and influential treatises, had powerful patrons, entered the ranks of nobility and became the owner of real estate, and – in spite of all the risks involved – managed to survive, must surely be called "successful".

Not surprisingly, there seem to be very few candidates for that honour. The possessors of the philosopher's stone in Early Modern transmutation histories were usually "mysterious strangers" who appeared out of nowhere and disappeared without trace, or at best people with names who did leave some traces in sources but otherwise made no impact on later history of alchemy or intellectual history in a broader sense (some of the more famous were Marco Bragadino, Georg Honauer, and Alexander Seton). On the other hand, the authors of the most influential books, such as Oswald Croll, Andrea Libavius or Michael Maier, never claimed they had produced the tincture nor even received it from someone else (the "mysterious strangers" somehow did not like them) and thus did not perform public transmutations. They even attempted to publicize the fraudulent practices employed to cheat others, as did Michael Maier in his *Examen fucorum pseudochymicorum* (1617). In other words, the *personae* of the *Betrüger* and the scholar-philosopher were kept apart. The latter sometimes created an imaginary adept, a sort of their *Doppelgänger*, and produced treatises under his name, so that they did not need to prove their expertise with practical experiments (the best known examples being Basilus Valentinus and Eireneus Philalethes, most probably brain children of respectively Johann Thölde and George Starkey). It was an interesting new development, different from the medieval alchemists' practice of ascribing their treatises to real authorities who never wrote on alchemy or even criticized it, such as Ramon Lull, Arnould de Villanova, or St. Thomas Aquinas.

One alchemist who attempted to merge the two *personae* as a way to success was Edward Kelley, the notorious companion and spiritual medium of John Dee. Older literature presented him as a rogue and thief with his ears cut off but more recent scholarship is more openly appreciating his keen intelligence, wide learning, and abilities to manipulate people. He performed transmutations both privately for Dee¹⁴ and publically in the house of Tadeáš Hájek of Hájek (1525-1600)¹⁵ and in the presence of Octavio Misseroni (1567-1624), the Emperor's jeweller who was certainly an expert on the quality of gold.¹⁶ The chronicler of the Rožmberks, Václav Březan, recorded how on March 28, 1588, in the presence of his patron, Kelley gave some tincture to the Třeboň court scribe who performed the transmutation.¹⁷ The information about those feats of alchemical mastery was widely circulated and mentioned by Hoghelande, Libavius, Gassendi, Morhof, Ashmole, and others.¹⁸ The Polish polyhistor Jan Jonston (1603-1675) wrote in his major work of 1632 that there were "many histories about transmutations of other metals into gold by Paracelsus, Kelley, and Seton."¹⁹

Edward Kelley was born in Worcester on August 1, 1555, and baptised in St. Swithin's church the next day. The record of the event is very brief: "Edward, the sonne of Patrick Kelley was bapt. 2°. Augusti".²⁰ There are no signs of nobility or any other type of higher social status. The family must have been local burghers and later accounts make him either an apothecary in Worcester or a notary in London, as well as a student in Oxford (none of which can be confirmed), suggesting his strong motivation for moving upward on the social ladder.²¹ It was so strong that it outweighed any moral scruples and even in his early career Kelley is said to have tried necromancy, fraud, faking documents, etc. When he eventually appeared on John Dee's doorstep on March 8, 1582, he introduced himself as Edward Talbot. The reason for this is not clear from Dee's diaries but probably Kelley wanted to make an impression that he is somehow related to the important Talbot family, who were landowners and sheriffs of Worcestershire, Earls of Shrewsbury, and held important offices.²² Dee recognized "his wicked nature and his abominable lies" from the very beginning of their partnership and noted he had "confirmed that Talbot was a cozenor",²³ which may suggest he discovered Kelley's true identity, but nevertheless he continued to employ him as his skryer and allowed to be manipulated on many occasions, culminating in the wife-swapping episode.²⁴

A few months later Kelley married Joan Cooper, soon after she became a widow of John Weston, a "clark" of Chipping Norton near Oxford. Susan Bassnett observes that the reason for that marriage was unclear because Joan Cooper "appears to have had neither money nor influence to bring as a dowry".²⁵ Such conclusion is, however, unsubstantiated because nothing is really known about John Weston and the designation of his profession as a clerk could refer to a number of different jobs, from a local scribe to a scholar or lawyer, but certainly someone who was educated. Louise Schleiner even suggests that he may have been a member of a knightly Weston family.²⁶ More weight is added to this possibility by their daughter Elizabeth Jane Weston, the distinguished neolatin poet known as Westonia, who insisted on the nobility of her parents and also stressed the fact that her mother knew Latin and therefore was well educated.²⁷ Whatever the truth may have been, it seems obvious that John Weston was not a poor man. And if the story that Kelley was for a time a notary (which should rather be understood as a scrivener than notary public) is to be believed, then John Weston may well have been one, too, perhaps even employing Kelley. Some scriveners were very successful financially, as for example John Milton's father. Thus marrying a widow was certainly a major step in Edward Kelley's path to economic independence because

she and her children inherited whatever property John Weston owned, whether money, scrivener trade tools or contacts.

When Olbracht Łaski (1536-1605) appeared on the scene, it was Kelley who immediately recognized him as a possible new patron, whose great wealth might ensure better life for both Dee and himself. A possible next king of Poland (Łaski enquired the spirits about it), very rich, interested in alchemy, and apparently believing in the revelations of the spirits Dee and Kelley conversed with. Madimi, the little spirit-girl, even declared some details on how Łaski is a descendant of the English powerful Lacy family,²⁸ which was certainly intended to better dispose Dee towards him, knowing the latter's predilection for genealogy and millenarian role of the British Empire. Although the diaries do not show how Dee arrived at the decision to leave England for the Continent, Kelley must have worked on it on both sides, as suggested by Dee's note that Łaski "also delighted in E. K. his company".²⁹

During their stay in Poland and Bohemia until they parted in February 1589, it was again Kelley who actively arranged acquaintances, travelling a lot from Třeboň to Prague, Cracow, and Germany. He was already making a name of a great alchemist for himself (he even had an assistant and a secretary³⁰), while Dee seems to have been concerned either with petty matters of everyday life or with his prophetic mission of renovating the world. Kelley did not initiate his partner into his dealings with Olbracht Łaski, Vilém of Rožmberk, and certainly other potential patrons and influential officials. As Edward Fenton put it, he "seems to have had little charm but great magnetism" and easily "impressed the richest, wisest, and most powerful people of his day".³¹ But he evidently reinforced his magnetism with constantly improving knowledge of alchemical theory and practical laboratory skills, using Dee's books and even making him translate some of them "by spiritual commandment".³² The demonstrations of alchemical transmutation with the red powder which he claimed he had found in England (on Northwick Hill) still remain one of the strangest enigmas in the history of alchemy. While he may obviously have used some tricks to fake the transmutations performed by himself before gullible Dee, it is quite certain that he also gave some of the red powder to Dee, to Rožmberk, and perhaps also to Emperor Rudolf, so that they could try it for themselves. In 1591 William Cecil, then Lord High Treasurer, requested Edward Dyer to "procure some small, though very small portion of the powder to make demonstration in her Majesty's own sight of the perfection of his knowledge".³³ Arthur Dee later remembered that his father had given some of the powder to Queen

Elizabeth “who having made trial thereof attempted to get Kelly out of prison”.³⁴

The fame of Kelley became so widespread that even Rudolf sought his assistance with some alchemical work undertaken by the Emperor.³⁵ He certainly felt that the time was ripe for climbing another step towards success and becoming a nobleman. Although it is usually stated that he was knighted by Rudolf, the process was actually more nuanced. Kelley pretended that he already was a nobleman, a member of Irish knighthood, and on that basis was granted citizenship of the Kingdom of Bohemia by the Parliament, at the request of the emperor and a long list of Czech lords, on June 12, 1598. The record calls him “Eduard Kelley, born an Englishman [*Englezar*], of the knightly kin and house called Imaymi in the county of Conaghaku in the kingdom of Ireland”,³⁶ so it was not a nobilitation but recognition of his foreign noble status, technically called *indigenat*. The condition of receiving full rights of a Czech knight was to pay allegiance to the new country but Kelley first sent his oath in writing, with his seal attached, to the land court on June 15, explaining that he was lying ill in Třeboň and could not come personally.³⁷ The document, discovered by Pavel R. Pokorný, starts with the same claim of noble status: “I, Edward Kelley, born Englishman [*Englecer*], of the knightly family and house of Imaimi in the county of Conghak, from the Kingdom of Ireland”. Then on August 22, 1589 Kelley appeared at the court and proclaimed his allegiance to the Kingdom of Bohemia in front of vice-chancellor Křištof Želinský of Sebuzín, the act of which was entered into the court records on August 30.³⁸

The seal which Kelley used has the diameter of 34 mm and displays a shield with the coat-of-arms (a chevron between three lions rampant), surrounded by the inscription EDWARDVS KELLEY IMAYMI and a laurel wreath. The arms is different from that of the original O’Kelly (Ua Cellaigh) of Hy-Many (Ui Maine) family (a tower supported by two lions rampant) but similar and Kelley obviously knew about that ancient and powerful family in the Irish county of Connacht (Connaught).³⁹ It is probably the same seal which Dee imperfectly described later from memory in a letter to Francis Walsingham dated August 20, 1589, writing that Kelley was “created a Baron of the kingdom of Bohemia; with the grant of a coat of arms; as I have seen in a large seal, being a lion rampant with [the lion of England,] in a bordure, with the year on the seal, viz. 1573, and a motto round it.”⁴⁰ The preserved seal has part of the inscription at the top illegible and the year would fit there. Dee was wrong, however, concerning the ennoblement of Kelley. He was certainly not made a baron, nor was he granted arms (and it is strange why Dee did not

see anything wrong with the year 1573 if the grant had been from the emperor). It was only on February 23, 1590, that Rudolf issued a document announcing that Edward Kelley was a Golden Knight (*equus auratus*) of the Holy Roman Empire⁴¹ which, however, was only an additional honour conferred to show the monarch's favour but without any formal rights or privileges.

Having thus obtained the full rights of a Bohemian nobleman, Edward Kelley could become a landholder. On April 30 of the same year 1590 his tested patron Vilém of Rožmberk gave him two of his estates, Liběřice and Nová Libeň with nine villages belonging to them, near the town of Jílové (Eule).⁴² There were the famous gold mines near that town, by then exploited, and Ivan Sviták speculated that Rožmberk may have hoped to revive them or possibly Kelley discovered a method to obtain gold from mine waste.⁴³ In addition to that, Kelley himself bought twelve houses in Jílové (including the former town mint, now the museum of the goldmines, and the Fumberk farm with a brewery and a mill) and two houses in Prague New Town, one later known as the Faust house. The value of his real estate was later estimated at 34,369 schock of Meissen groschen.⁴⁴

This could be considered the crowning of a successful career. But remaining on top was really hard for alchemists and the top was exceptionally slippery. When he did not fulfil the Emperor's expectations, he was found to be a *Betrüger*, and a warrant was issued after him on April 30, 1591.⁴⁵ Kelley was described as "an average fat person with long black hair (which he may have cut short to disguise himself), and a thin black beard, with one leg crippled." He was soon caught and imprisoned for two years in the Křivoklát castle near Prague, but eventually released in October 1593, "both fat and merry", and enjoying renewed "great credit with the Emperor".⁴⁶ Interestingly, when the English traveller Fynes Moryson visited Prague in March and April of 1592, he made a note of seeing "the House of Kelley a famous English Alcumist" and even transcribed the inscription over its gate, but did not mention that he was in prison at that time.⁴⁷

Other guests from England also continued to visit him, some sent by royal intelligence, others hoping to discover his secrets and bringing him presents. In 1890 a private owner in England possessed a manuscript "containing a quantity of beautifully executed coats of arms on vellum" which was entitled: *The armes of the Crowne and of the Nobilitie of England drawen out by M. Roehan Ohiligh and presented to the Right Honorable Sir Eduard Kelley Knight Baron of Imany Lorde of Newe Liben*

*and Libbers and one of the Emperours privy Counsell at Prague the 18 day of June Anno 1596.*⁴⁸

In Bohemia he was popularly known as “the Englishman” (*Engellender*), as reflected in both official documents and chronicles of the time.⁴⁹ When in September 1596 the local master of the mines in Jílové, Eliáš Günther of Jáchymov, reported on the situation in the area to the highest master of the mint, count Bedřich (Fridrich) Šlik (d. 1611), he wrote that the town was in a very poor condition because “the Englishman” had bought twelve houses, with brewery and the mill, and introduced his monopoly to the detriment of the burghers.⁵⁰ He clearly felt no need of giving Kelley’s proper name as everyone knew who “the Englishman” was. Also Karl Widemann (1555-1637), Kelley’s secretary and later an important participant of early Rosicrucian developments, called him “*Engelender aus Wittgenaw*” (the Englishman from Třeboň) in his manuscript book of recipes.⁵¹ This nickname is crucially important for disentangling the tradition of the Seton-Sendivogius legend, to which I will return below.

Kelley resumed correspondence with Dee⁵² and, because Vilém of Rožmberk had died on August 31, 1592 and the Emperor was no longer so well disposed towards him as before, he was obviously in need of new patrons (or rather victims). Early in 1595 the elector and archbishop of Cologne, Ernst von Bayern (1554-1612), visited him in Prague and had a conversation in the presence of Peter Ludwig Messinus, an alchemist in his service.⁵³ He was also contacted by Oswald Croll (who became sceptical of his abilities)⁵⁴ and the Prague physician Matyáš Borbonius of Borbenheim (1566-1629).⁵⁵ The former golden age was, however, all gone.

It seems that Kelley did not draw proper conclusions from his imprisonment and continued to live a life of adventurer. As an owner of much real estate, he had no problems borrowing money for his extravagancies and probably for continued alchemical experiments. Using his personal magnetism and the power of his red powder, he managed to convince others to entrust their money to him, probably promising great wealth, as was the case with the 1100 schok of Meissen groschen lent to Kelley by Blažej Stav, a maltster master of Prague New Town, on December 15, 1594. Already on January 2, 1595 that sum was increased by Baltazar Wagen of Wagensperg, a Silesian knight, with 3380 thaler. Some time later the debt was taken over by Jan Fridrich Hofmann of Grünbüchel and Střechov.⁵⁶

When there were no results of the investments and the alchemist did not pay the money back, the creditors became impatient and sued him for

debts. He sold two cottages and the two houses in Prague to his sister-in-law Ludmila Lažická z Písnice, the wife of Thomas Kelley. The money he got from her was not enough, however. Unfortunately for Kelley, the last of the creditors mentioned above was a nephew of Ferdinand Hofmann of Grünbüchel and Střechov (d. 1607), the president of the royal exchequer,⁵⁷ and one of his land estates was confiscated.⁵⁸ The atmosphere around Kelley became dense and when he injured Sebald Schwärtzer and his assistant Georg Humler in the Imperial *Kunstammer*, the former appealed to the Emperor and Kelley was arrested again, put in the Křivoklát tower,⁵⁹ and on November 7, 1596 was transported to the castle in Most, where he was to serve his sentence.⁶⁰

Joan Kelley moved to Most with her son and daughter, and made desperate attempts to save as much of the remaining real estate as possible.⁶¹ After spending a year in Most, Kelley and his family arranged for his escape from prison but he is said to have fallen from high and broken his healthy leg. According to the Czech alchemist and Rudolf II's geologist Šimon Tadeáš Budek z Lešína, he poisoned himself in the presence of his wife and children.⁶² He died on November 1, 1597, as reported by the administrator of the castle, Baltazar Stecher of Sebnitz, who calculated the cost of Kelley's imprisonment from November 7 of the previous year to be 334 schock and 59 Meissen groschen. The town council wanted to have it reimbursed by the Imperial Court but they made problems.⁶³ The Emperor sold Kelley's two land estates for 22,000 schock of Meissen groschen (even though they were estimated at 33,000) to Štěpán Jiří of Šternberk (1570-1625), from whom they were purchased, still in the same year 1597, by Kryštof Želinský z Sebužína, the chancellor of the kingdom.⁶⁴

The alchemical career of Edward Kelley was most spectacularly successful for his *personae* of *Betrüger* and entrepreneur. Numerous transmutations performed with his red powder (later also oil) gained him the fame of a genuine *lapide philosophorum possessor* and attracted rich patrons seeking to utilize his practical expertise in their own alchemical laboratories. He was much less successful as a philosopher-scholar. The treatises that were either written by or attributed to Kelley were not widely read and quoted, nor were they included in standard collected editions of alchemical texts such as *Theatrum chemicum* or *Bibliotheca chemica curiosa*. His socioeconomic success was considerable but meteoric. Having married a widow, he sneaked into the ranks of Czech nobility, and became the owner of much real estate, both land with castles and cottages, and magnificent houses in the gold mining town of Jílové and the capital city of Prague. Skilfully administered, those possessions would have

secured prosperous life for him and his family. But Edward Kelley did not pass the final test in alchemy: the projection of his achievements on the mercury of real life failed to produce the gold of independence. The touchstone of Emperor Rudolf II's thumb turned down and the *Engellender* did not survive, as so many before him. There was, however, one who followed him, whose career also started as a *Betrüger* but ended quite differently, and whose writings exerted much greater influence on later alchemy. That person was the Polish adept Michael Sendivogius.

When Andrea Libavius made up a list of those he believed actually succeeded in making the philosopher's stone, he included only three of his contemporaries: Edward Kelley, Michael Sendivogius, and Alexander Conthonius.⁶⁵ The last one is most certainly a misspelling or variant name for Alexander Seton (Sethonius), whose transmutation performed in Basel in midsummer of 1603⁶⁶ was witnessed by two physicians and university professors, Johann Wolfgang Dienheim (1587-1630) from Freiburg and Jacob Zwinger (1569-1610) from Basel. The former published his testimony in print,⁶⁷ while the latter circulated it through correspondence.⁶⁸ Another documented transmutation by Seton occurred in Nuremberg, in the presence of Georg Friedrich, margrave of Brandenburg-Ansbach (1539-1603), Wilhelm V count of Mansfeld-Arnstein (1555-1615), and Jan Osmolski (c1510-1593/1594), a Polish nobleman and scholar residing in Basle.⁶⁹ Seton was also contacted by the Rosicrucian Raphael Eglinus (1559-1622), a friend of Zwinger,⁷⁰ by the Paracelsian alchemist Bernard Gilles Penot du Pont (1519-1617),⁷¹ and others, and eventually settled down in Basel, where he died in his own house in 1606⁷² (or, according to other sources, not earlier than 1608⁷³), contrary to the later widespread legend.

Alexander Seton is the most mysterious of Libavius's three successful alchemists. As the hero of transmutation histories he was indeed successful in his *persona* of *Betrüger*, and he seems to have survived and died a natural death. The received legend makes him the real author of *De lapide philosophorum tractatus duodecim* published by Michael Sendivogius in 1604, but as now we know that Seton was alive and well at least two years later, the discussion of his supposed authorship may safely be closed, and his *persona* of scholar-philosopher cannot be regarded as successful. Too little is known about his entrepreneurial efforts to decide how successful he was in selling his practical knowledge and craftsmanship. If Seton indeed owned a house in Basel, it may suggest a modest success. Like Edward Kelley, he also pretended to be a nobleman, even an aristocrat, a Scottish count. He used several other names and it is by no means sure if Seton was his real surname. Most certainly he was not

a member of the powerful Scottish noble family of that name.⁷⁴ When on March 13, 1605 a warrant was issued after him by Frederick I, Duke of Württemberg, he was described as a Scot named Alexander Sydon, but also called Sylon or Stuart.⁷⁵ Alexander Sidon was also the name by which Friedrich Greiff referred to him in 1641,⁷⁶ while Michael Maier in 1617 called him Willebij.⁷⁷ Friedrich Roth-Scholtz in the introduction to his collected edition of the writings of Michael Sendivogius calls him “Alexander Sitionio, sonst Carnobe gennant”.⁷⁸ Penot called him Alexander Wolsigamius or William Alexander, while in other contemporary letters he is referred to as *Comes Scotus*, which motivated Otakar Zachar and Włodzimierz Hubicki to identify him with the equally elusive figure of Alessandro (Girolamo, Eduardo) Scotto,⁷⁹ who in turn is sometimes identified with Edward Kelley.⁸⁰ Still others tried to identify Seton with the Paracelsian alchemist Alexander von Suchten, complicating things even further, so that disentangling truth from fables and gossips circulated during their lifetimes, and confirming or disproving numerous hypothetical statements made by later authors is a truly daunting task.

Similar methodological problems are even more conspicuous in the case of Michael Sendivogius (or Michał Sędziwój in Polish), around whose life and writings so many myths arose that the eminent historian of science A. Rupert Hall, writing as recently as 1998, described Sendivogius as “a supposed Polish alchemist [...] of whom nothing is positively known”.⁸¹ While this statement is not quite true, as the research by Roman Bugaj, Włodzimierz Hubicki, and others⁸² did produce much sound evidence from primary sources, at the same time it is justified because the same authors also accepted many unverified facts from suspect sources, while some historians of alchemy did not even take notice of their work and still rely on earlier accounts.

The original source of the traditional legend about Sendivogius are the three surviving early biographies, written in the mid-17th century. Two of them were first published by Pierre Borel in his *Trésor de recherches et antiquités gauloises et françoises* (Paris, 1655), with the one in Latin translated into French, then by Henning Witte *Memoriae philosophorum, oratorum, poetarum* (1676), with the French biography translated into Latin, and then reprinted in Nicolas Lenglet Dufresnoy's *Histoire de la philosophie hermetique* (1742). Thus they became widely accessible to encyclopedists and biographers across Europe due to the popularity of the two latter books.

One of those biographical sketches is entitled *Vita Sendivogii Poloni nobilis baronis* and was written in Latin by an anonymous author who is introduced as a German and the alchemist's former lawyer (“oratore,

patrono, seu causidico"). He also identifies his other informant as a Jan Budowski ("Johann Budowsky"), his close friend and the butler ("oeconomus") of Sendivogius for many years, who often carried his master's red tincture in a golden box round his neck. His judgement on Sendivogius is very enthusiastic, presenting him not only as an alchemical adept but a magician as well. The author seems to know more about the alchemist's later life, while the description of his early years (Rudolf II sent him to the east and while in Greece he learned how to make the philosopher's stone from a Greek patriarch) does not sound trustworthy even to the author himself, as he remarks "if one can believe these relations" (*si cuius relationi fides adhibenda est*). Such critical attitude makes *Vita Sendivogii* more reliable, especially as many facts from it can be verified with primary sources. The comments by the original publisher Pierre Borel, however, gave credence to the other biography, and he was followed by other commentators such as Morhof, who wrote that "the relation of Budowski, Sendivogius's butler, does not deserve trust".⁸³

The second account of the life of Sendivogius is a letter dated June 12, 1651 from Warsaw, written by Pierre Des Noyers (1606-1693), personal secretary to the Queen of Poland, Marie Louise Gonzaga, and an important member of the *respublica litteraria*, especially as a correspondent of Ismaël Boulliau.⁸⁴ It is the original source of the Seton legend, conspicuously absent from the anonymous *Vita*, although the adept is not identified with Alexander Seton yet, being just called "an Englishman" (rather than a Scot), and "Cosmopolite". Contrary to the opinion held by Borel, Morhof and others, and still supported by some authors today, this biography is completely unreliable. Practically every factual statement can be shown to be wrong when confronted with primary sources.⁸⁵ We do not know the informants of Des Noyers, but as he was living mostly in Warsaw, he did not have much opportunity to meet persons with firsthand knowledge of Sendivogius.

The third of the early biographies, much less known, is also a letter, dated March 20, 1661 from Cracow, and written by Girolamo Pinocci under the pseudonym of Poliarco Micigno, an anagram of his name.⁸⁶ Pinocci was an Italian from Lucca who came to Poland in 1651 and served as a secretary to two Polish kings, Władysław IV and Jan Kazimierz. He was also a diplomat, master of the mint, and custodian of the Royal Archives in Cracow, as well as the publisher of the first Polish regular newspaper *Merkuriusz Polski Ordynaryjny*. Pinocci corresponded with Des Noyers and may also have met him personally, as they shared interest in astrology, and he clearly knew the account of the life of Sendivogius by the Queen's secretary written ten years earlier. It is possible that it was at

his request that Pinocci investigated the matter in Cracow, where people who had known the alchemist still lived (actually he says he had three such informants) and where he had easy access to archival documents. Unlike Des Noyers, however, he dealt with alchemy himself, so was more strongly motivated to find out the truth. The inventory of his library and manuscripts lists many alchemical items and, on the more practical side, together with his brother Caspar he administered the ironworks in Jarochovice.

A number of facts from Pinocci's relation can be confirmed, so it is more trustworthy than that of Des Noyers. He gives the name of one of his informants as Szymon Piotr Batowski who met Sendivogius in Marburg in 1616. That person had indeed been a student of Hartmann⁸⁷ and in the early 1660s was employed by Pinocci in the royal chancellery. After his death Pinocci bought from his son-in-law a number of manuscripts, translations of alchemical works from German and Latin, and his own commentaries including *Notae Hartmanni*, obviously notes from his Marburg studies. It is tempting to identify this Szymon Piotr Batkowski with the Jan Budowski from the *Vita*, as did Roman Bugaj,⁸⁸ but besides different forenames and not identical surnames, the latter is said to have been a very close confidant, while the former only witnessed Sendivogius's transmutation in Marburg.⁸⁹

In Pinocci's account the adept, whom Sendivogius saved from prison, was also "an Englishman" but one whom he had met earlier and spent a long time with in Germany. That English alchemist possessed the tincture with which he produced gold for their adventurous life but would not reveal the secret to Sendivogius, so after his death the Pole lived with his widow without marriage (contrary to Des Noyers's version) and eventually published a treatise from his notes. Neither was he the author of *Dialogus* and *De Sulphure*, though Pinocci did not know who wrote them.

Alexander Seton is not mentioned in any of the three early biographies. The identification of *Comes Scotus* with the Englishman of the Sendivogius story came later. William Newman noted that it was Morhof who suggested they were the same person in 1673,⁹⁰ but the statement already appears in Ole Borch's *De ortu et progressu chemiae* in 1668.⁹¹ Still earlier, on May 20, 1664 Borch recorded in his diary that he learned about it from Kennelm Digby.⁹² On the other hand, the identification is not mentioned by Borel in either edition of his *Bibliotheca chimica* (1654 and 1656), even though some writings ascribed to Seton are listed and he obviously knew the letter of Des Noyers published by himself in 1655.⁹³

The next group of printed sources important for the life of Sendivogius consists of four items published at the turn of the 16th and 17th centuries,

all panegyrical in nature, seeking his patronage and offering the authors' services. In 1598 appeared two volumes of poems, one of which was by Jiří Carolides of Karlsperk (1569-1612), a celebrated humanist and important Rudolfine poet, later a friend of Westonia. Written in Latin and entitled *Praecepta institutionis generosae indolis*, it was dedicated to the elder son of Sendivogius, Krzysztof Michał, and included advice to him for his later life. There were also added a few more poems on other members of the family, as well as Piotr Gorajski (d. 1619), a Calvinist leader of Polish dissenters and at the time a close friend of Sendivogius. Most importantly, Carolides preceded the poems with a short introduction in prose, which delineates the genealogy of the family and gives some details of the young Sendivogius's father's life.

The second volume of poems published in the same year was by Bartosz Paprocki (c1543-1614), a very prolific Polish writer who emigrated to Bohemia for political reasons and lived there for 22 years, known as Bartoloměj Paprocký of Hloholy and Paprocka Vůla. Besides his many occasional poems and epigrams, he is especially remembered as the author of the first and still important systematic work on the genealogy of Polish-Lithuanian nobility. After leaving Poland he did the same for the nobility of Moravia, Bohemia, and Silesia, which earned him an important place in Czech historiography. The book of verse in Czech was entitled *Jiná Částka* and formed the second of the three volumes of *Nowé Kratochwile*, the first of which was published in the preceding year. Of a large number of poems included in it, many were serious and dedicated to persons of high standing, while others just facetious comments and observations, or translations of Latin and Polish poets. One of them is on the poetry of Jiří Carolides and, interestingly, mentions Michael Sendivogius as the patron of both of them. The next poem is dedicated to Sendivogius himself, then one on the birthday of his younger son Krystian Henryk, another one on father's duties, and one dedicated to the elder son Krzysztof Michał, then four years old. There are two poems dedicated to Ludvík Korálek of Těšín, and a short four liner "On a certain alchemist" who was much concerned about gold and now is imprisoned in a tower for debts, which may have been a commentary on Edward Kelley's recent fate.

On October 23, 1599 the wife of Michael Sendivogius died and the sad occasion was commemorated in a Latin elegy written by another distinguished poet and Prague university professor Jan Chorinnus (c1560-1606). It was published in print only in 1604 and the title included important details about the origins of his late wife: "Illustris[simae]

Foeminae D. Dn. Veronicæ Stiberiæ é Nobiliss[ima] familia apud Francos oriunde”.

The last and perhaps most important source from this group is also by Bartosz Paprocki but written in prose. It is a 15 pages long dedicatory epistle for one of three parts of his major work *Ogrod krolewsky*, a general history of royal and ducal dynasties of Europe, which he regarded to be his *magnum opus*, while posterity, as it often happens, decided it is the least important of all his writings. It is preceded by a woodblock illustration of the coat of arms and a short epigram on it, and the epistle itself, besides the usual panegyric praise, delineates the genealogy of the family of Sendivogius, to which I will return below. Two poems are added after it, one on fortune being less important than virtue (with the last two verses stating that Michael Sendivogius should be forever famous in his native Sarmatia, i.e. Poland), and the other a warning against calumnies and calumniators, probably an allusion to some recent problems Sendivogius may have experienced.

Comparing this group of contemporary printed sources with the previously mentioned early biographies, one has an impression that they refer to different persons. Sendivogius appears as a Polish nobleman, well educated, favoured by Emperor Rudolf, apparently very rich, whose patronage is sought by poets and scholars. Normally one expects an alchemist, in any of the three *personae*, to look for rich patrons rather than being patrons to others. Most surprisingly, however, there is no mention of or even allusion to alchemy. The closest is perhaps when Paprocki praises the great abilities of Sendivogius in both science and practical expertise (*scientia et peritia*), and describes him as a lover (*amator*) of geometry and astronomy, while, he says, “*in Mechanicis* among the many accomplished masters I can easily call Your Honour the first (*principem*)”.⁹⁴ It may refer to his experience in metallurgy or medicine, which he also practiced in Prague, but may also be an allusion to some other craft he had learned in youth.

Those panegyric publications are also of questionable value for getting closer to the truth about Sendivogius. Due to their character, the authors obviously tended to glorify their patron's supposed virtues and exaggerate his achievements or social position. On the other hand, they could not introduce facts which would be immediately recognized as false by their potential readership. As Sendivogius was not a native of Prague, however, they had to rely on information provided by himself. Eliciting the truth from such sources is, therefore, very difficult and uncertain, requiring verification against truly objective primary sources, which are scarce in the case of Sendivogius, and even those cannot be trusted.

Alchemists in their *Betrüger* guise lied also at courts of justice, chancelleries, imperial and royal courts, they lied to their patrons, friends, and families, ever striving for publicity and trying to improve their social standing. But it is only with independent primary sources and their proper interpretation that one can reach an impression that the result of one's research is at least a misty reflection of what was really going on in the past.

There is, finally, a third group of sources of information on the Polish alchemist which might be called "second hand" sources. These are publications of 19th century Czech historians who had a good mastery of archival materials but unfortunately did not care to include references to them. To complicate matters further, they tried to merge their findings with the received version of the Seton-Sendivogius legend and the early biographies. The most important of these are Ferdinand B. Mikovec (1826–1862), Josef Svatek (1835–1897), and Zikmund Winter (1846–1912). The first one was a playwright, poet, and cultural historian, who published many short articles in a weekly magazine founded and run by himself. In 1855 he wrote a series of articles on the alchemists in Rudolfine Prague, generally of poor quality, but with some bits and pieces apparently from archival sources. Josef Svatek was also a cultural historian and author of many historical novels. He published two accounts of alchemy in Bohemia in collections of "pictures from Bohemian cultural history", one in 1879 in German and the other in Czech in 1891. Although both books bear the same title, the second one is not a translation of the first but a new book, with different sections and much more factual information. Svatek clearly undertook extensive archival research on Kelley, Sendivogius, and others, and it is a pity he did not document it properly. Zikmund Winter was a similar type of person, also wrote historical novels, but was certainly the best scholar of them three, especially remembered as the author of monumental works on the daily life in Czech schools, towns, and church institutions. He did some research on Sendivogius but chose to write a novel about him rather than a historical monograph. Such a monograph was prepared by Otakar Zachar (1870–1921), the most important historian of Czech alchemy before Vladimir Karpenko, but it is most probably lost as it was sent to the printers on the eve of World War I and never heard of again, nor is it to be found among Zachar's surviving manuscripts.

With so many conflicting accounts of Sendivogius it is hard to decide which elements of any story are acceptable without recourse to more objective primary sources and wider social and family context. Starting with the alchemist's origins, the anonymous *Vita* and the panegyrists insist

that he was a Polish nobleman, even calling him a baron, while Des Noyers makes him a Moravian, claiming that his name was included in a catalogue of Polish nobility by mistake (which may be a distant recollection of Paprocki, whose book was the only such catalogue at the time but did not include Sendivogius). Pinocci has a version that Sendivogius was an illegitimate son of a Polish nobleman named Sędzimir and was born in 1556 near the town of Sącz. The same year of birth is indirectly given by the *Vita*, but according to Mikovec he was born in Cracow on February 2, 1566 “without any doubt”. Roman Bugaj supposed that he may have found a horoscope of Sendivogius in Emperor Rudolf’s archives, which is of course possible, but still undocumented. Most curiously later historians accepted the date but rejected the place of birth provided by Mikovec. Bugaj, Hubicki, Figala, Szydło, and others give that date of birth as if it were certain, at the same time accepting Pinocci’s claim that he was born near Sącz or more specifically in the village of Łukowica, which was used by Paprocki and other panegyrists in the full form of the alchemist’s name “Michał Sędziwój of Skorsko, baron on Łukowica”, and indeed was the seat of the Sędzimir family of petty nobility of the Ostoja arms,⁹⁵ the surname attributed to Sendivogius’s father by Pinocci and Paprocki. To complicate things further, both Sędziwój and Sędzimir are Polish given names, quite popular at the time, which in the case of this family became petrified as patronymic surnames.

In his dedicatory epistle to *Ogrod krolewsky*, Paprocki not only identified Sendivogius as a member of that family but also delineated its genealogy and included illustrations of the coats of arms of spouses, also that of the wife of Sendivogius. Paprocki is notorious for inventing fabulous ancestors in his genealogies, so it is no surprise that the Sędzimir family is said to descent from powerful magnates of the 13th and 14th centuries and that part of the pedigree may well be ignored.⁹⁶ Some of them are also listed by Carolides, obviously informed by Paprocki personally, as his *Praecepta* was published a year earlier. More reliable information starts with the alchemist’s great grandfather Stefan who had four grandsons: Andrzej, who died without issue, Jakub, the father of Michał, and Piotr and Stanisław, who also had sons. This genealogy was accepted by earlier researchers as reliable but without the necessary verification through primary sources.

Such verification was possible only after extensive research in castle and land court records of the counties of Sącz and Cracow carried out by the editorial staff of *Słownik historyczno-geograficzny województwa krakowskiego w średniowieczu*. Waldemar Bukowski, the author of the entry for Łukowica, even extended the time period covered by the project

and included much of the 16th century specifically to elucidate the origins of Michael Sendivogius. At roughly the same time a manuscript genealogy of the Sędzimir family by Bogdan Henryk Łuszczyński was discovered.⁹⁷ Its compiler was a Cracow archivist of the second half of the 19th century and appended nearly 400 regests, mostly from court records, which allowed to cross-check them with those in the *Słownik* card files, and with some additional sources.

The reconstructed genealogy shows the family starting with three brothers, owners of parts of the villages of Kępie, Kurozwęki, and Ibramowice located to the north of Cracow at the end of the 14th century. They may have been grandsons of comes Sędzimir of Chełm, known from a record of 1304, who was from the same heraldic clan. A son of one of them appears in the sources alternatively as Sędzimir or Sędziwój, still a given name only, as hereditary surnames were only beginning to form at that time in Poland. Around 1430 he sold his parts of Kępie and purchased (possibly partly inherited) half of Łukowica, for which he received a grant of Magdeburg Law from the king Vladislaus III of Varna in 1444. His grandson Stefan or Szczepan (two forms of the same name) is the one mentioned by Paprocki, in whose version, however, one generation (Szczepan's son Marcin) is missing and the son's wife is linked to the father (her first name is wrong, too). But when we come closer to the times Sendivogius, the names of Jan's sons and grandsons and the names of their wives are the same as given by Paprocki, so the sources seem to corroborate his version, with one important exception, however. There is no trace of Jakub, the alchemist's father, and his brother Andrzej. About the latter Paprocki says that he died without issue, so he may well have died young and thus did not appear in court records. But Jakub should be there. His two brothers, Piotr and Stanisław, are really well documented with dozens of records and it is inconceivable that a third brother would not be mentioned in any of them. Moreover, they start to appear in the sources a year before their father's death as "undivided brothers" and only twelve years later, in 1568, formally divide their inheritance between themselves, without mentioning any other brother. Their five sisters, when they were getting married, resigned their rights to that inheritance on the two brothers' behalf, which means that they received their share and formally confirmed at court that they were satisfied. Should there be a third brother, he would have to be mentioned in those records, even if for some reason he had been excluded from the inheritance.

There is one mention of a Jakub Sędzimir in the voluminous records searched. In 1551 a nobleman of that name accompanied the Cracow land court usher at the intromission of another nobleman into his newly

purchased estate. Because ushers were usually non-noble, a noble witness was required for the act to be legal and the need was often fulfilled by impoverished noblemen for a small fee. As his existence is not confirmed anywhere else, there is always a possibility of a scribal mistake, but if this Jakub was indeed a brother of Piotr and Stanisław, then he must have been excluded from inheritance by their father, maybe with his share given to him in cash. He would also have to be dead by 1568, so if Michael Sendivogius was born in 1566, he would have been orphaned right after his birth, and even if Pinocci and the *Vita* were correct in placing his birth in 1556, he would still have been a child when his father died – a fact that would surely be used by Paprocki and Carolides to emphasize his unique achievements. But it was not. Paprocki correctly indicated that Piotr was no longer alive at the time of writing but did not do the same about (more important in this context) Jakub. One would expect the panegyrist to say at least a few words of praise about his patron's father, listing (or inventing, if there were none) his achievements, naming his estates, expounding his virtues and qualities of character. Paprocki does nothing like this, just giving his name, while Carolides does not even do that. After enumerating the impossible early ancestors, he only mentions Stefan Sędziwój by name as the great grandfather (*proavus*) of the alchemist's son Krzysztof, but at the same time writes that Stefan's son was Krzysztof's father (without giving their names), so he would really be the grandfather. After his precepts to the son of Sendivogius, Carolides added "Symbola et nomina Sendivogiorum, hactenus superstitum", which included short poems dedicated to Stanisław, his sons Jan and Gabriel, and Marcin, the son of Piotr. It is doubtful that all of them came to Prague or that Carolides went to Łukowica, so the only explanation seems to be that he wrote them on request from Sendivogius. The explanation might be hidden in another short poem at the end of the same small volume, written "Ad eundem [Michaellem Sendivogium] ex Polonia reversum", expressing the joy of his friends on his return from Poland to Prague.

Fortunately, we know the reason why he went to Poland. Carolides dated his introduction on November 1, 1598, while less than a month earlier, on October 7, Sendivogius appeared at the castle court in Sącz, accompanied by Stanisław Sędzimir, Gabriel Sędzimir, and Jan Pielsz, his maternal cousin, who all solemnly swore that Michael was a nobleman, a legitimate son of Stanisław's brother Stefan.⁹⁸ So here the alchemist's father's name was not Jakub, as in Paprocki's genealogy published a few months later (his epistle is dated August 22, 1599), but Stefan, the same as his grandfather in the version of Carolides, and great grandfather in Paprocki's version. Something is really suspect about this, and why would

Sendivogius need to prove his noble status with the formal oath of his relatives?

The institution of confirming nobility was often used in Poland for illegally entering the noble class. People who became wealthy but had no chances for legal nobilitation often paid poor nobles who stated at court they were their relatives. The oath was formally entered in the records and copies made of it worked as nobility patents. Paprocki, the topmost heraldic authority, certainly knew about the practice and was in a position to arrange it for Sendivogius. The Sędzimir family was quite poor at the time, with three adult members owning half of the village of Łukowica, while Sendivogius appears to have been rather wealthy, with imperial poets seeking his patronage. The pamphlet of Carolides and epistle of Paprocki would then serve as further confirmation and amplification of his nobility, listing the same living relatives but disagreeing about his father's name.

At that time Sendivogius had been a courtier of Rudolf II for over four years and probably already had some relations with king Zygmunt III of Poland, so the question arises why he was not nobilitated by either of the two monarch. The situation was quite similar to that of Edward Kelley: it was much better to be a member of the old nobility with full rights to own land and hold offices, the privilege that was limited in the case of newly created noblemen. But Sendivogius did use his position of proximity to the Polish king and on March 8, 1600, during a session of the Polish Parliament in Warsaw, obtained from him a charter of augmentation of his coat of arms (*auctio stemmatis*), signed by many senators and entered into the records of *Metrica Regni Poloniae*. The arms described is the same as in the illustrations provided by Carolides and Paprocki, so Sendivogius must have used it at least two years earlier, just like Kelley did. Moreover, due to the nature of Polish heraldry such modifications of the arms were practically unknown, except for foreigners receiving indigenat in Poland. Specialists in the field unanimously interpret this charter, and several others from the same time, as hidden nobilitations. The traditional royal power to grant arms and create new members of the noble class was gradually restricted in Poland, so that from 1578 it was only possible during parliamentary sessions and with its consent, while the act of 1601 deprived the king of that prerogative and it became the exclusive right of the parliament. In 1600 preparation of that new law was certainly underway and there was little chance to pass new nobilitations, so a number of people were made noblemen with the legal trick of augmenting their supposed arms. The king was obviously aware of it, and so were the

senators who signed the charters as witnesses, which shows how important the position of Sendivogius must have been.

The coat-of-arms was quartered, the Ostoja arms of the Sędzimir family in fields 1 and 4, and the crest of another Polish clan arms, Przegonia, in 2 and 3. This is quite curious, as normally the paternal and maternal arms would be quartered, so it should have been the Korczak arms, as that was the alchemist's mother's heraldic clan according to Paprocki's genealogy, while Przegonia is conspicuously absent from his pedigree. Of the two crests (the feature that was unknown in Polish heraldry), one is also that of Przegonia, while the other displays a crescent moon between two lances, the origin of which is not clear but may be connected with the name with which Sendivogius was immatriculated at the University of Leipzig in 1590, namely Miciółkowski (*Maczolkofsky*). The arms augmentation charter also says cryptically that Sendivogius's ancestors were from the family of "Sendimiri et Maszkoni" which may be a reference to the same name. There is no such name (in either form), however, in any repertorium of Polish or Czech nobility – with one exception. The original ("old") Siebmacher's *Wappenbuch* has the arms for "*Macziolkowski*" in the section on Bohemia and it displays a dragon quite similar to that in the crest of Przegonia, holding a lance. The probable scenario would thus be that Sendivogius, pretending to be a nobleman, used that arms first, and afterwards Paprocki devised a way for him to obtain formal confirmation of nobility and designed the new arms, incorporating elements of the old one and the Ostoja arms of the family which recognized him as one of their kin.

So, like Edward Kelley before him, Michael Sendivogius seems to have obtained a confirmation of his pretended nobility. This does not explain, however, who he really was. It is possible that Pinocci had valid information, being the director of the Royal Archive in Cracow, and Sendivogius was an illegitimate son of one of the Sędzimirs. On the other hand, however, the confused accounts about the name of his father seem to suggest that he was invented for the sake of the genealogy and Sendivogius was not a member of that family in any sense, legitimate or not. Such conclusion is supported by Josef Svatek. As in the case of Kelley, his information on Sendivogius can be trusted when not derived from the received legend, even though he gives no references. On the topic of the alchemist's origin he actually refers to the records of Prague Old Town court but does not give details. His version states that the parents of Sendivogius were unfree peasants from the discript of Sandomierz and after he committed homicide in his youth, he had to escape from Poland. In his first account Svatek says he went to Bohemia,⁹⁹ but in the second

version he adds the detail that his parents were serfs on the estates of the Potocki family, and that Sendivogius escaped to Germany, where he wandered in the circles of alchemists, met Dee and Kelley, and eventually became Seton's apprentice in Dresden.¹⁰⁰ While the last piece may be regarded as Svatek's attempt to integrate the received story of Seton with his archival findings, the rest is quite independent of any earlier (and absent from any later) accounts of the life of Sendivogius.

The earliest known primary sources mentioning Sendivogius are the entries of his university immatriculation. Both Paprocki and Carolides expound his good education, and the latter says that he studied at "Academias florentissimas, Cantabrigiensem, Ingolstadiensem, Lipsensem, Altorphinam, Francofurdiensem, Rostochiensem, Vitebergensem." While the German and Austrian universities were standard destinations for Polish and Czech students, the absence of those in Italy are quite surprising. But the prominent place of Cambridge as the first university on the list is really unexpected, because no Poles, Czechs or Silesians are known to have studied there prior to the late 19th century (formally from the times of the Reformation attending either Cambridge or Oxford was restricted to those of Anglican faith) – with two interesting exceptions.¹⁰¹ One was Jan Jonston, the famous natural historian who studied at Cambridge in 1623-24 and 1629, but as a son of a Scottish émigré cannot be really counted as a Pole (even though he called himself "Polonus"). The other exception was Simon Hájek, the eldest son of the renowned Tadeáš Hajek, the host of John Dee and Edward Kelley on their first visit to Prague. He first went to Oxford in 1574 with his younger brother Jan and afterwards took his B.A. at Cambridge in 1581, with the diploma being issued to him on 18 May 1582.¹⁰² The absence of the name of Sendivogius in the Cambridge records does not necessarily mean that he never studied there but only that he was not formally immatriculated.¹⁰³

There is no entry of Sendivogius among the numerous Poles at the Catholic university of Ingolstadt,¹⁰⁴ but he was recorded at the third of the universities listed by Carolides, the Lutheran university of Leipzig. As mentioned above, he was immatriculated in 1590 as "*Michael Sendzimir Maczolkofsky*", for the second (winter) semester only.¹⁰⁵ The entry bears no signs of nobility (such as "nobilis" or "dominus") and he was the only student from Poland in that academic year. The following year, on October 13, 1591, he entered the Catholic university in Vienna, again as the only Polish student and with his name recorded as plain "*Michael Senzimier Polonus*".¹⁰⁶ The lack of other Polish students may be treated as a confirmation of Svatek's statement that he had to escape from Poland. More importantly, however, the use of the surname Sendzimir/Senzimier

may be connected to the district of Sandomiria, where his peasant parents lived according to Svatek. Both the district's name and that of its capital city (today Sandomierz) were often spelt Sendomir(ia) and occasionally also Sandimir(ia) well into the 19th century, and are etymologically derived from the personal name Sędzimir.¹⁰⁷ So the Leipzig entry can be interpreted as giving the place of origin and the surname in the wrong order, as it usually was the reverse (as, for example, a student from the same district immatriculated in 1594 as "Alexander Pelka Sendomiuiensis [!]"). It is obviously hard to speculate why he dropped the Maciołkowski surname in the Vienna record but again if Svatek's story about the homicide committed by Sendivogius is true, it would be sensible to change the name so that he could not be traced. Concerning the form of that surname, it is derived from a relatively common peasant name Macioł or Maciolek by adding the "-ski" suffix, at the time regarded as typical for the surnames of nobility. It is thus probable that the father of Sendivogius was a peasant of that name but practically impossible to identify as peasant surnames were not hereditary and very few of them appear in any type of records.

On May 1, 1594 Michael Sendivogius became a courtier of Rudolf II, listed in the section of "other counsellors and servants... who are not permanently at court" as "Herr Michael Sedzimir freyherr von Storsko, Ligoto und Lukowiza" serving with three horses.¹⁰⁸ In July of the same year he enrolled at the protestant university at Altdorf as "Michael Senzimir a Skorsko und H[err] zu Lukowiczae, Röm. Kay. Mt. Hoffdiener".¹⁰⁹ So the plain Michael Sendzimir became the Baron of Skorsko, Ligota, and Łukowica. The last of these land estate names is that of the Sędzimir family discussed above, there are several villages called Lgota and Ligota in the area of Cracow (but none close to Łukowica), but Skorsko, which was used consistently by Sendivogius throughout his life, has never been identified with any degree of certainty. Some German authors thought it was Skorkau (today part of Gronowice) in Silesia, Henryk Barycz proposed it was Zgórsko near Sandomierz, while Kazimierz Lubiński suggested the village called Skoryki in the Ukraine. For the time being it will have to remain unexplained. But clearly something happened between 1591 and 1594 that allowed the transformation of a poor student, probably of peasant stock, into a baron and member of the imperial court.

The elder son of Sendivogius was four years old in 1598, so his father must have got married in or before 1594. The wife of Sendivogius died on October 23, 1599, as testified by the elegy of Chorinnus, who calls her "Veronica Stiberia" from a noble family in Franconia. Paprocki gives her

name as “Weronika s Tybryn” (which should be read in the context of the Polish text as “from Tybryn”) without any additional information. He does, however, include a small illustration of her coat-of-arms. Her identity has not been properly researched so far, except for some speculations that she came from a family of Nuremberg patriciate. The arms is, however, that of an old family of Franconian knighthood named Stiebar von Buttenheim, so Paprocki’s version was simply a misspelt maiden name Stiebarin.

A detailed genealogy of the Stiebars published by Johann Gottfried Biedermann (1705-1766) does not show any Veronica which might fit chronologically.¹¹⁰ It was not until a recent discovery of archival sources mentioning her that the mystery could be resolved. The records of the Imperial Chamber Court (Reichskammergericht) in Munich contain several cases in which she is specifically mentioned as the wife of “Michael Sedzimir von Skorsko”.¹¹¹ Most interestingly, Veronica turns out to have been a widow of Hans Ehrenfried von Absberg, Amtmann in Baiersdorf, who died in 1592, and the mother of his two sons. Her mother was Ursula von Fronhofen, at the time wife of Andreas von Horkheim, and earlier a widow of a Stiebar von Buttenheim zu Sassanfahrt, whose first name is not mentioned. The court cases were concerned with the land estates inherited by Veronica and her sons, Hans Ernst i Hans Heinrich von Absberg. Their legal guardians, Hans Konrad von und zu Absberg and Philipp Jakob von Eyb zu Rammersdorf, accused Veronica that she was unable to administer their land estates because “she had married an unknown Pole” (*sich mit einem unbekannten Polen verehelicht habe*). They also requested that her mother Ursula should return the children to them, so that they may be sent to a tutor in Nuremberg, because in Sassanfahrt there were no conditions for their proper upbringing. It means that Veronica left her sons with the grandmother, as she and her new husband lived in Spalt.

The Biedermann genealogies of the other related families and a monograph of the von Absberg family give conflicting information about the member of the Stiebar family who was the father of Veronica and husband of Ursula (either Christoph zu Buttenheim und Aisch or Erhard zu Regensperg).¹¹² There were two main branches and several lines of the family flourishing in the 16th century and since one of them had their residence in Sassanfahrt, it was certainly the one in question, rather than either of the two indicated by the genealogies. By the early 1590’s all lines of that main branch became extinct and thus in all probability Veronica became an heiress to at least part of the property. This is further supported by the court records in which three male members of the other main

branch of the Stiebar family, Albrecht, Pancratius, and Georg Sebastian, are listed in 1598 as the closest relatives of the two sons of Veronica. Whatever the details of the relationships were, she was certainly a rich widow and marrying her was a crucial stage in the career of Michael Sendivogius, perhaps even a springboard to Rudolf II's court. On the other hand, it is hard to imagine how a wandering student from Poland managed to convince the wealthy noble widow to marry him, leave her children and move to Bohemia. Interestingly, the Stiebar family was not only politically and economically important, but one member of the Sassanfahrt line, Daniel Stiebar von Buttenheim (1503-1555), was also a humanist scholar and a friend of Erasmus of Rotterdam.¹¹³ Almost certainly he was Veronica's grand uncle, so she may have also shared intellectual interests with her new husband. In a letter to Rudolf II in 1597 Sendivogius asked the emperor to give the land estate of Libochovice, with a magnificent castle, to "his wife and children", perhaps as a compensation for the property left in Franconia.¹¹⁴ The goods had been confiscated from Jiří of Lobkovic, leader of the Catholic opposition, and held by the state until 1610 when Rudolf granted them to Adam of Šternberk, so this early attempt of Sendivogius at becoming a landowner was unsuccessful.

According to Josef Svatek, Sendivogius met Dee and Kelley in Germany, and later also Seton. It may be an interpolation from the received Seton story and from the fact that Sendivogius bought the Fumberk farm in Jilové from Joan Kelley. If true, however, it must have taken place in 1586, when the two Englishmen went first for a few days to Leipzig, returned to Prague, and upon being expelled from the country travelled to Erfurt, Gotha, and Kassel before they received the news that they were allowed to go back and stay in Třeboň. Alternatively, Sendivogius may have met Kelley after Dee returned to England, perhaps between October 1593, when the "Engellender" was released from his first imprisonment, and May 1594, when the Pole became the courtier of Rudolf II. It is also possible that Svatek had access to some Polish sources, in which the whole of the Holy Roman Empire was often referred to as Germany and thus the meeting of the two alchemists may have taken place at the imperial court in Prague.

When Edward Kelley was imprisoned for the second time in 1596 and his land estates were confiscated, his wife had to sell the houses in Jilové and Prague to pay his debts and move to Most to be close to him. The Fumberk farm, which according to Svatek had been bought from her own resources for 4300 schock of Meissen groschen,¹¹⁵ was sold to Sendivogius. His ownership of it is well attested in primary sources and by reliable researchers.¹¹⁶ It is even possible to point to an approximate date

when the purchase took place. On October 16, 1597 Sendivogius borrowed 5695 schok of Meissen groschen from Ludvík Korálek of Těšín and issued a promissory note stating that he would return it in two years' time.¹¹⁷ It was certainly the money that he paid to Joan Kelley for the Fumberk farm. When Korálek's family sued him after the merchant's death, he was arrested in that estate in Jílové and during the process at court one of the witnesses stated that he had it from "Lady Englishman" (*paní Engllendrový*).¹¹⁸ This is further evidence for Kelley being popularly known in Bohemia as simply "the Englishman". If we consider the fact that both Des Noyers and Pinocci used the same designation for the alchemical master of Sendivogius, calling him "the Englishman" (Des Noyers even stressed it that he could not learn his real name), then the purchase of land property from Lady Kelley, maybe together with her husband's books and manuscripts, nicely fits and explains the origin of the later legend. In Des Noyers's version Sendivogius married the English alchemist's wife but according to Pinocci he lived with her without marriage. While there is no evidence to support either claim, it is chronologically possible. Edward Kelley probably died on November 1, 1597, Sendivogius's wife Veronica died on October 23, 1599, Joan Kelley returned from Most to Prague with her two children probably in 1598 (on August 18, 1598 the Royal Chamber ordered that the cart on which the family had come to Most, earlier confiscated as it was to be used for Kelley's escape, should be returned to her¹¹⁹). She died almost certainly in 1606, as her daughter Westonia in the undated elegy on her mother's death says she gave birth to three children by then (from her marriage in April 1603),¹²⁰ while she had seven children before she died prematurely on November 23, 1612. Most interestingly, the next owner of the Fumberk estate was Johann Leo of Eisenach (Jan Lev Isenašský), the husband of Westonia, who decided to sell it in 1620 but the prospective new owner died before the transaction was completed.¹²¹ It appears, therefore, that Sendivogius returned it to either Joan Kelley or her daughter, maybe as her dowry when she was getting married.

So by the late 1590's Michael Sendivogius was already an incredibly successful person: member of the privileged noble class, married to a rich widow, an owner of a small land estate, and the courtier of Rudolf II. He also called himself a baron, imperial counsellor (said to have been made one at the Reich Parliament (Reichstag) held in Regensburg in 1598) and "truksas".¹²² The last term is derived from the German name "Truchsess" for a court office similar to steward, called *dapifer* in Latin and *stolnik* in Czech and Polish. In Bohemia the office of the highest truksas was

hereditary in the Zajíc of Hazmburk family but the term was also used less formally for those who were allowed to dine with the emperor.

It was not only the royal favour of Rudolf II that Sendivogius enjoyed. As already mentioned, he received the augmentation of his coat-of-arms (or rather hidden nobilitation) from Zygmunt III in 1600 and certainly was well known to the king earlier. In an undated letter to the emperor, the king asked him for intervention when Sendivogius was imprisoned in Prague, explaining that he was his subject, whose services he highly valued, and that he needed him in Poland for the planned army conscription.¹²³ He was also made royal secretary, probably right after his nobilitation, and used that title throughout the rest of his life in all formal documents and in private correspondence. There were two types of royal secretaries in Poland, those actually working at the court and receiving a salary, and titular ones who had no obligations and only occasionally did services for the king. Sendivogius was certainly one of the latter category as his name is not to be found on any payroll or listing of members of Zygmunt III's court,¹²⁴ but he certainly did services for the king. Already in 1600 he was sent to Rudolf II for diplomatic negotiations concerning the situation in Moldavia. In a letter of June 13 of that year, dated in Warsaw, Zygmunt wrote to Rudolf: "I am sending Michael Sendivogius to Your Imperial Highness in order to achieve agreement on Moldavian affairs. That province has always been under our protection. Jeremiah [Mohyla], the hospodar of Wallachia, behaved quietly, when suddenly Michael [the Brave] invaded him, killed his guards, and proceeded as far as Chocim, at which we cannot look impartially."¹²⁵ It was an important political mission so Sendivogius was clearly a trusted confidant of the king.

He was also a trusted agent of the emperor at the same time. Although we do not know the exact nature of his services, already in 1599 he is known to have had a document from Rudolf II commanding the princes and everyone else within the Empire to give him whatever help he needs, including horses, carriages, and food.¹²⁶ Another similar charter, "*Securitas publica ad 8 menses pro Michaelae Sandivoio Polono*", was issued by the emperor on July 30, 1601 or 1603.¹²⁷ In the context of his supposedly noble status and calling himself a baron it is striking that Rudolf used the form of address appropriate for plebeian intellectuals, namely "egregious", rather than the standard "generosus" or at least "nobilis" (indicating the lower nobles). Neither did he mention any offices or other titles of the Pole.

From the death of his wife in 1599 Sendivogius remained unmarried, possibly living for some time with Joan Kelley without marriage, as

already mentioned. The “Lady Englishman” was obviously not an attractive candidate for wife since because of her late husband’s lifestyle she was in severe financial situation, seeking help from the emperor (and eventually receiving it).¹²⁸ But another widow caught his attention and they got engaged in 1605 or earlier. The lady in question was Anna of Štampach, a widow (unsurprisingly) of Jiřík Belvic of Nostvice who died about 1601. Both families were of high standing and wealthy but Anna’s financial situation can best be inferred from her later marriage. In 1606 she broke the engagement with Michael Sendivogius who even sued her for that but she explained at court that he had left Bohemia and therefore she felt herself free to marry someone else.¹²⁹ Her new husband was Jan Lorenc of Žerotín (1583-1619), a member of the most powerful family in Moravia and a close relative of equally powerful ones in Bohemia, such as those of Rožmberk and Lobkowitz. Moreover, Jan Lorenc was barely 23 while she must have been in her thirties and had four children by her previous husband. The fact that his family accepted the marriage cannot be explained by his possible “imperfections”, as he married again after Anna died and his second wife was a member of the Lobkowitz family. Had Sendivogius succeeded in marrying Anna of Štampach, his status, both financial and social, would have been greatly improved. Interestingly, one of her children was Jan Kryštof Belvic of Nostvice, certainly identical with Christopher á Belvitz, secretary and counsellor of Frederick IV, Elector of Palatine, father of the later “Winter King” of Bohemia, a close friend of Elizabeth Weston. She dedicated to him a poem, sending thanks for his concern about the situation she and her mother found themselves in.¹³⁰ It is thus possible that Sendivogius met his fiancé through the Kelley family or that Westonia knew Belvic through the Polish alchemist.

Leaving Bohemia had grave consequences for Sendivogius. Not only did he lose the chance for a good marriage but was also imprisoned and robbed of his possessions. In 1605 he had been lured to Stuttgart by Frederick I, Duke of Württemberg, who employed him in his alchemical laboratory¹³¹ and granted the fief of Neidlingen, an independent Herrschaft which the duke inherited in 1596. Unfortunately, Frederick had already given it to a *Betrüger* alchemist, Hans Heinrich von Mühlenfels, who felt his position was endangered by the new rival and arranged (possibly with silent approval of the duke himself) for kidnapping and imprisoning Sendivogius, hoping to elicit his secrets by persuasion and torture. The Pole, however, managed to escape and a long lasting affair followed, with the emperor (who requested that Mühlenfels be sent to Prague immediately), the king of Poland, and a number of other important personages getting involved. News about it quickly spread in both courtly

and alchemical circles all over Europe¹³² and Frederick had no other choice but to declare von Mühlenfels guilty of everything and sentence him to death. He was hanged on June 30, 1606, not for his alchemical frauds, however, but for high treason.¹³³ Sendivogius tried to recover the money, jewels, and other things he had lost, as well as receive the agreed payment for his work in the laboratory for a number of years afterwards, sending letters and petitions to the duke, and later to his son and successor Johann Frederick, but apparently to no avail.¹³⁴

Back in Poland, Sendivogius stayed for a few years in Krzepice, in the castle of Mikołaj Wolski of Podhajce (1553-1630), then court marshal and from 1616 grand marshal of the kingdom. Although not at the top of the formal hierarchy, he was regarded as person number three in the whole commonwealth, right after the grand chancellors of Poland and of Lithuania. This informal position of Wolski was reflected in the instructions given to Brandenburg envoys in 1600 indicating who should be bribed and how much should be offered to each of them to gain acceptance for the elector to become the successor of the princely throne of East Prussia. The all powerful chancellor Jan Zamojski was estimated at 30,000 florins, his Lithuanian counterpart, Lew Sapieha, at 12,000, and Mikołaj Wolski at 10,000 florins. For comparison, Olbracht Łaski, the patron of John Dee and Edward Kelley, was worth 4 or 5,000 florins, holding the eighth position.¹³⁵

According to Pinocci, Wolski was a patron of Sendivogius from his earliest years. There is, however, no evidence to confirm it, and it seems that Pinocci projected his knowledge of later involvement of Sendivogius with Wolski backwards on his youth, claiming that the marshal financed his education and early journeys. The anonymous author of *Vita Sendivogii* says the same but pointing to Rudolf II as the first patron, which may also be retroprojection.

Mikołaj Wolski was one of the best educated Polish magnates, brought up at the imperial court in Vienna as a childhood companion of the three younger sons of Maximilian II (Rudolf had been sent to the court of Philip II in Spain).¹³⁶ When Stephen Báthory was elected king of Poland, Wolski emigrated to Prague and stayed at the court of Rudolf II for ten years, returning to Poland only after his death. In the 1590's he started to take over numerous local ironworks in the royal estate of Krzepice (leased to him for life) with the intention of organizing a metallurgical industrial centre. He was also interested in alchemy, sharing the passion with king Zygmunt III himself,¹³⁷ and when rebuilding the castle for his residence, had an alchemical laboratory arranged in the cellars.¹³⁸ Employing Sendivogius as an expert marked the beginning of the last phase of his

grand project: he built two blast furnaces, the first in Poland, and started iron production on industrial scale, with a large trip hammer and other mechanical inventions used to process the output, producing cannons, mortars, cauldrons, iron sheets, and various types of wire.¹³⁹

Little is known about the life of Sendivogius in Krzepice. In 1607 he had a conflict with Stanisław Picus Zawadzki, a physician from Cracow, son of the more famous rector of the Jagiellonian University of the same name.¹⁴⁰ It ended with a fight in the court of Krzepice and Sendivogius showed his wounds at the castle court in Cracow.¹⁴¹ But his cooperation with Wolski was certainly appreciated by his patron, as in 1610 he received 8000 florins for his services.¹⁴² According to Des Noyers, Sendivogius defrauded Wolski of 6000 francs but this information is highly doubtful because as late as 1626 he represented the grand marshal at the municipal court of Cracow, buying a house for him.¹⁴³

In 1610 he visited the court of Vincenzo II Gonzaga, duke of Mantua (1562-1612), and apparently was invited to stay there but on his return to Poland he sent the duke a letter informing him that it was not possible.¹⁴⁴ The reason he gave was that he had planned to get married but when he was in Italy, the father of his beloved forced her to marry someone else. While it sounds curious as the reason for not moving to Mantua, it seems possible that Sendivogius attempted once again to marry into a wealthy family. Unfortunately, there is nothing in the letter that would allow to identify his would-be bride and so it is not possible to speculate about possible social and financial benefits he may have expected.

In 1614 and 1615 “Magnificus Dominus Michael Sendivogius, Sacrae Regis Majestatis Secretarius,” as he was addressed in the municipal court records, bought a cottage with a garden just outside the city walls of Cracow, which became his home for the next ten years, and two other houses nearby, probably as a source of income because there lived various craftsmen in them.¹⁴⁵ The residence was near the small gate of St. Anna, on the other side of which was (and still is) the Collegium Maius of the Jagiellonian University, making it an ideal location for an independent scholar, wishing to use the resources of the university library and discussing ideas with its professors, but without being formally a member of the staff. The garden can actually be seen on contemporary panoramas of Cracow, most notably that produced by an anonymous engraver circa 1603-1605, included in the sixth volume of Braun and Hogenberg’s *Civitates orbis terrarum* (Cologne, 1618), and the gigantic two meters long view engraved by Matthäus Merian and published by Hondius in Amsterdam in 1619.¹⁴⁶

As he had no luck finding an appropriate wife, Sendivogius lived with a plebeian concubine surnamed Rusinowska. Walerian Nekanda Trepka, a Polish nobleman from the vicinity of Cracow, recorded that she was for nearly twenty years “a whore to the alchemist Sendivogius who lived in Cracow beyond the gate of St. Anna until 1626” and later went to live in Germany (meaning the Holy Roman Empire).¹⁴⁷ At the same time he also had an affair with Zofia Necianka, out of which a daughter named Agnieszka was born. In 1618 she lived in Sendivogius’s house and he formally recognized her as his child. Her mother was by then the wife of Sebastian Labus, possibly the marriage having been arranged by Sendivogius.¹⁴⁸

The alchemist in his *hortulus chymicus*, surrounded by symbolic trees and animals, especially lions and eagles, was a common image in the emblematic literature of alchemy. The emblem representing Sendivogius in Michael Maier’s *Symbola aureae mensae* of 1617 actually shows him standing in the garden, with Saturn watering the trees. It is not impossible that Maier either visited him there or heard about the garden and was thus inspired to depict him in that way. What must have made even greater impression on visitors was the fact that Sendivogius actually had a live eagle in his garden, as recorded in a contemporary monastic chronicle:

The first arrival of the Reformed Franciscans to Cracow with the Rev. Fr. Alexander Patawin had been announced by an eagle of exceptional size, never seen in this country. It flew into the city, then lowered its flight, circled the town hall several times, and inclined many people first to admire it, and then to consider something exceptional [would happen]. Having rested for a while in the marketplace, it flew into the courtyard of Michael Sendivogius's cottage, where it was caught and domesticated, and lived there until the Reformed Franciscans moved in. Because some time later that ground, with other adjacent ones, was purchased by Krystyna Grochowska, Countess of Zborów, for the monastery of Reformed Franciscans, and so the brethren received it together with that eagle, still alive, showing them the way.¹⁴⁹

The fact of selling his estate to countess Grochowska was entered into the records of the castle court in Cracow on January 16, 1625.¹⁵⁰ The ownership was at once transferred to the representatives of the order and a monastery was soon built, and then equally soon burned down in 1655 during the Swedish siege of Cracow because it was too close to the city walls.¹⁵¹ The present monastery was afterwards built within the city walls.

Having disposed of his cottage, Sendivogius immediately purchased three houses in the city itself, one of which was located at St. Stephen’s square, next to St. Stephen’s street where John Dee and Edward Kelley

resided forty years earlier. The house was later owned by Jan Kołaczkowski, his son-in-law who married the illegitimate daughter mentioned above (his name was also recorded by Pinocci in a corrupted spelling), and was commonly known as “Sendivogian” even in the 19th century before it was pulled down in 1908. But the alchemist did not live there for a long time, as he was offered a post at the imperial court once again, this time by Ferdinand II. On January 8, 1626, he was formally nominated the emperor’s counsellor, a copy of the charter he received was entered into castle court records of Cracow,¹⁵² and he went to Prague. According to Pinocci, the task Sendivogius embarked on was to discover, organize, and administer lead mines in Silesia. While this is possible, no sources are known to confirm it. It is certain, however, that on July 31, 1626 he was granted a salary of 500 florins annually “ad dies vitae”, which was raised to 1000 florins on August 12.¹⁵³ Moreover, it appears that he had been in the emperor’s service much earlier, as already on December 31, 1625 he wrote to Ferdinand II reminding him about 18,000 florins which the emperor owed him and asking for granting him the estate of Stínava in Moravia as compensation for it.¹⁵⁴ Later he was not paid regularly, either, so continued trying to get one of the other numerous land estates which had been confiscated after the Battle of White Mountain. Finally, on July 29, 1630, Sendivogius received the estate of Kravaře and Kouty near Opava in Czech Silesia, the value of which was estimated at 26,000 thalers.¹⁵⁵ He was also promised a house in Olomouc, one of the most representative residences in that city, in which Frederick the Winter King stayed during his Grand Tour of Bohemia. Although his ownership was eventually not confirmed, he seems to have lived there for some time.¹⁵⁶

Thus Michael Sendivogius finally became a baron (*Freiherr* or *svobodný pan*) in the original sense of the title he had illegally used throughout his known life, a full owner of two villages and a small castle surrounded by a wall, exempt from imperial taxes, with stable income not depending on changing humours of any patron. He had good relations with Ferdinand II, the third emperor of the Holy Roman Empire whom he served, he was the secretary of Zygmunt III, king of Poland, and owned houses in Cracow, which also generated income. It was certainly a great financial and social success, incomparable to anything other alchemical adepts achieved. What is especially impressing, however, he continued to perform public transmutations until the last years of his life and, unlike most of his fellow alchemists of the *Betrüger* type, managed to survive. As late as 1667, over thirty years after Sendivogius’s death, Václav Maximilián Ardensbach von Ardensdorff, a Moravian physician and naturalist, disciple of Jan Marcus Marci, wrote to Athanasius Kircher that

when he had lived in Opava, he met people who had known Sendivogius familiarly and witnessed his transmutations of lead into gold. He also reported that Sendivogius gave some of his tincture to emperor Ferdinand II, who performed the transmutation himself.¹⁵⁷ The information on those transmutations was common knowledge among those interested in alchemy. As already mentioned, Libavius accepted Sendivogius as one of the few real adepts. In 1622 Matyáš Borbonius of Borbenheim, successor to Tadeáš Hájek as the land physician of Bohemia, wrote to his Silesian friend Georg Crommeromontanus, then a physician of Mikołaj Wolski in Krzepice, and assuming that Sendivogius had been dead, asked if he could obtain some of “the powder of that famous alchemist, tingeing imperfect metals to silver and gold” or “sancti regii tincturae”.¹⁵⁸ The news about Sendivogius’s death had been circulated even earlier, most notably by Oswald Croll in *Basilica chymica* (posthumously published in 1609) where he stated that the great adept Heliocantharus Borealis (with the name “Michael Sendivoius” cryptically encoded with capital letters in the text) “nunc in Christo quiescentem”.¹⁵⁹ Such news were probably spread by Sendivogius himself or at his request to ensure his privacy.

Michael Sendivogius died between May 20 and August 12, 1636 in his castle in Kravaře¹⁶⁰ and was survived by his only legitimate daughter Veronika Marie. His elder son Krzysztof Michał is known to have studied in Cracow and in Prague but probably died before his father, while nothing is known about the younger son Krystian Henryk. Veronika must have been somewhat impaired as she did not get married during her father’s lifetime and was about 40 years old when Jakub von Eichendorf, a poor Rittmeister from Brandenburg, married her (clearly for financial reasons) only two or three month later, in October 1636. They had no children and the land estate was inherited by his nephew, Hartwig Erdmann von Eichendorf, forming the nucleus of the later great fortune of the family in Silesia, the eminent member of which was the great romantic poet Joseph von Eichendorff (1788-1857).

Sendivogius can be regarded as the most successful (or even the only successful) alchemist of the Early Modern period. The public transmutations of his *Betrüger persona* were universally accepted as genuine and did not lead him to the gallows. His close relationships with many European courts, most notably those of three Roman Emperors and of the king of Poland, allowed his *persona* of entrepreneur sell his services in diplomatic matters, while his unquestionable technological skills in mining and metallurgy brought him considerable income from Mikołaj Wolski and Ferdinand II. The third *persona*, that of scholar-prophet, was perhaps the most successful. His three treatises, later published jointly as *Novum*

lumen chemicum, reached the unprecedented number of over 50 editions before 1800, were translated into several languages, and from the late 19th century continue to be published and read by historians, psychoanalysts, and esotericists. They inspired early scientists from the Royal Society,¹⁶¹ influenced Isaac Newton to a great extent,¹⁶² were studied by freemasons and by Lavoisier.¹⁶³ His prophetic statement in the preface to *Tractatus de sulphure* about the coming Fourth Monarchy had an impact on Johann Heinrich Alsted and was reprinted in millenarian collections of prophecies all over Europe. Moreover, he was known not only to the cognoscenti but features as the hero of Polish and Czech folk tales,¹⁶⁴ as well as novels and dramas.¹⁶⁵

Comparing the fates and fortunes of Michael Sendivogius with those of Edward Kelley, the former may be said to have been an intelligent disciple of the latter. He drew proper conclusions from observing the consequences of Kelley's inappropriate way of life, withdrew from the limelight on time, certainly did not promise too much to the powerful, and thus was able to survive in relative peace. His published treatises were on a much higher intellectual and literary level than those of Kelley, but most importantly he acquired practical knowledge of chemical technology and metallurgy which Kelley clearly lacked. Sendivogius also started his alchemical career as a *Betrüger* but managed to transmute that *persona* into those of a scholar and entrepreneur, the lead of his early frauds into the silver and gold of his immense success.

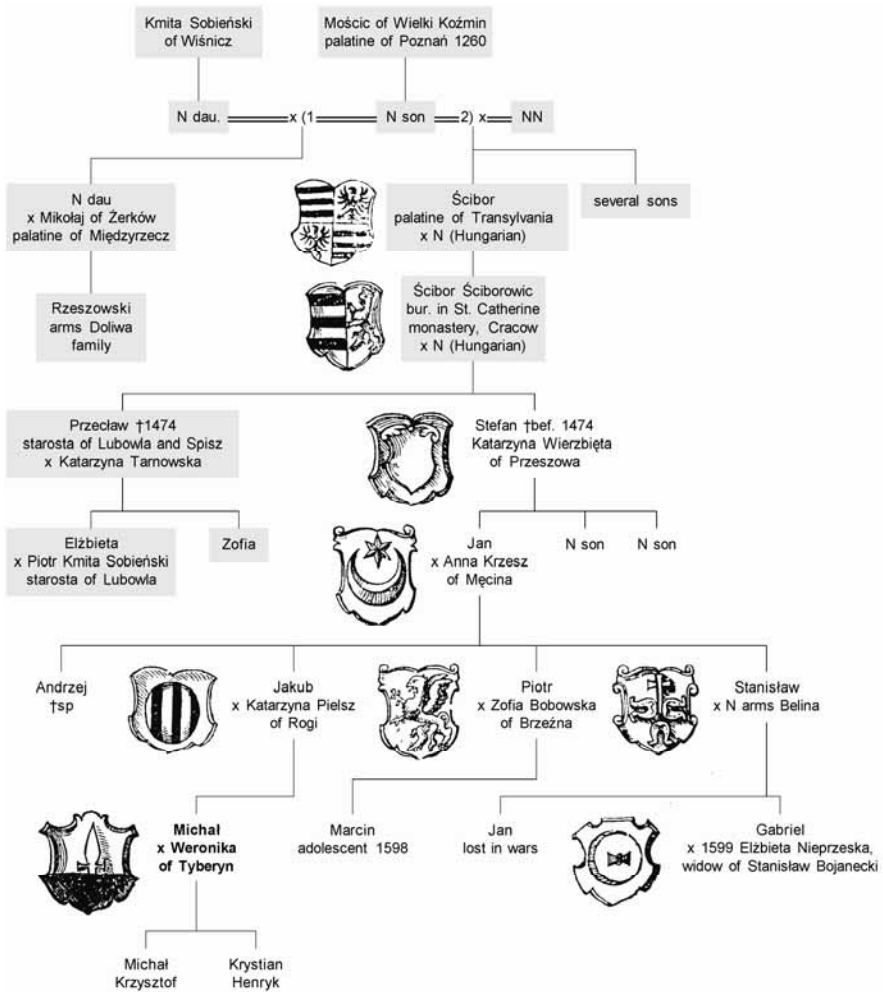


Figure 1: Genealogy of the Sędzimir family according to Bartosz Paprocki, *Ogrod krolewsky* (1599). Persons marked in grey are historical but with wrong relationships and obviously not members of this family. The coats of arms are those of wives.

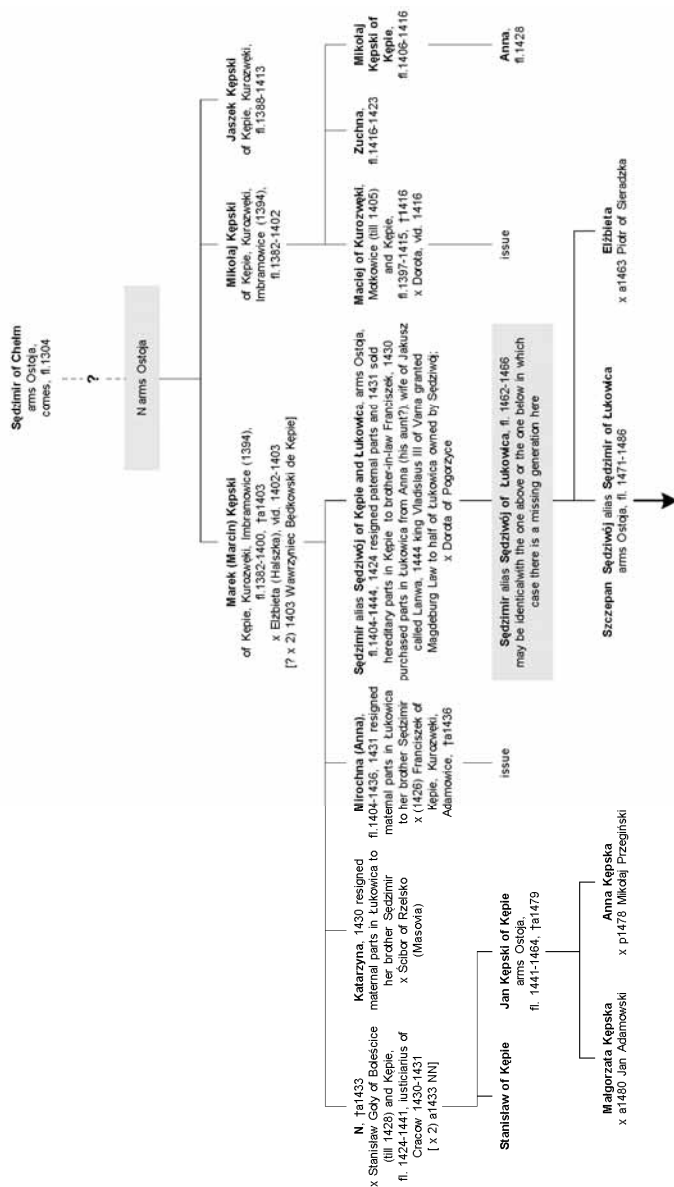


Figure 2: Early genealogy of the Sędzimir family reconstructed from archival sources.

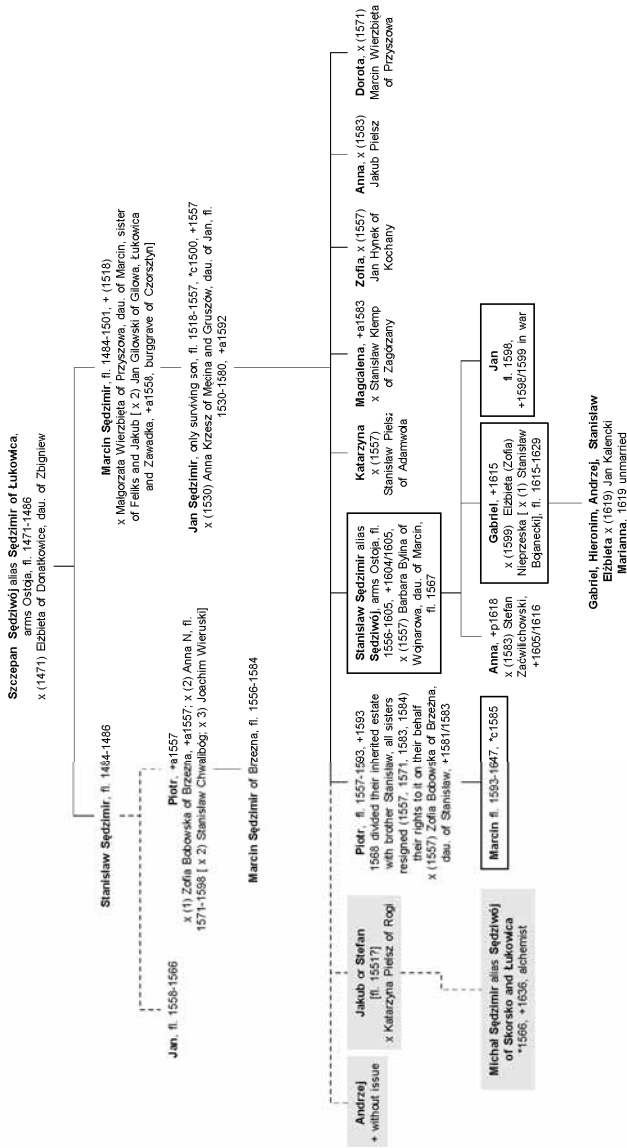


Figure 3: The Sędzimir family at the time of Michael Sendivogius. Persons marked in grey do not appear in any sources. Persons marked with boxes are dedicatees of poems by Jiří Carolides in *Praecepta institutionis generosae indolis* (1598).

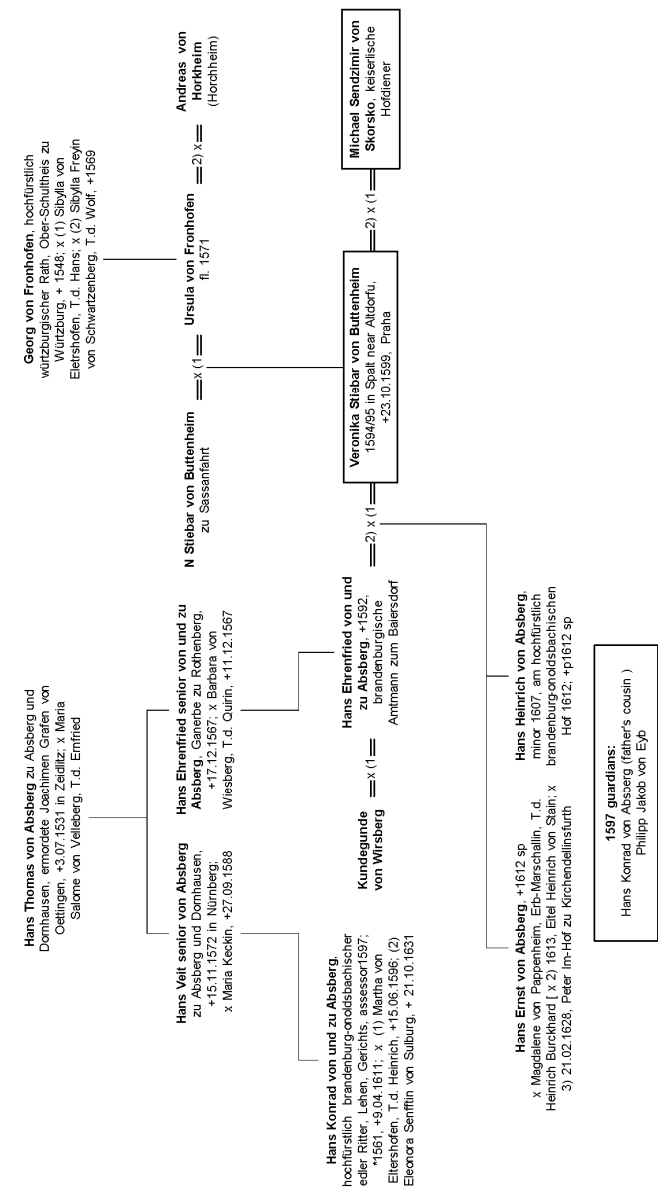


Figure 4: Family relationships of Veronika Stiebar von Buttenheim, the wife of Michael Sendivogius.

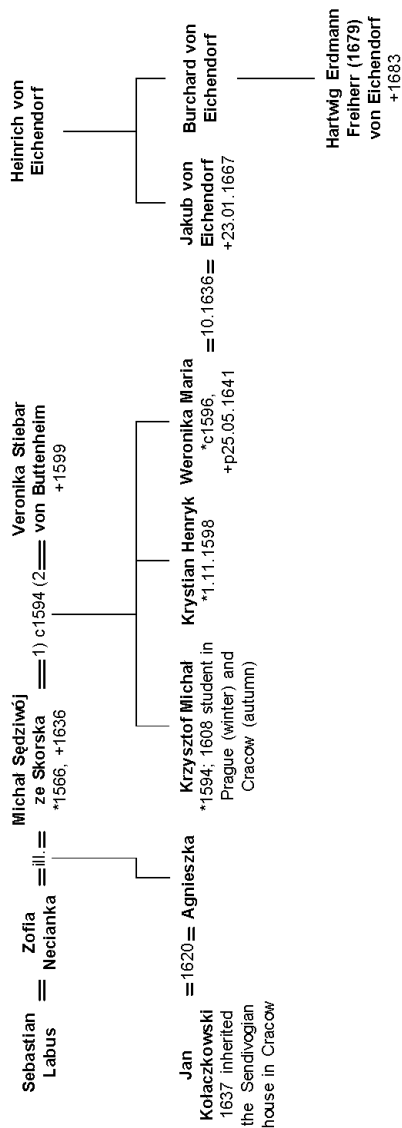


Figure 7: Family and heirs of Michael Sendivogius.

Notes

¹ William R. Newman, *Gehennical fire. The lives of George Starkey. An American alchemist in the Scientific Revolution*, 2nd ed. (Chicago and London: The University of Chicago Press, 2003), 4. The largest collection of such accounts is: Siegmund Heinrich Guldendfalk, *Sammlung von mehr als hundert wahrhaften Transmutationsgeschichten* (Frankfurt and Leipzig: J. G. Flescher, 1784).

² Tara Nummedal, *Alchemy and authority in the Holy Roman Empire* (Chicago and London: The University of Chicago Press, 2007), especially Chapter 2: *The Alchemist's Personae*. It should be noted that the term and concept of the *persona* is here derived from the anthropology of Marcel Mauss and the author skilfully distances herself from the Jungian understanding of it without even mentioning the Swiss psychologist's name (p. 42), thus escaping the possibility of being accused of the "Jungian approach" to alchemy.

³ For example in Poland from 1505 children from a mixed marriage did not inherit anything even if their father was a nobleman and the marriage was legitimate, thus making their status practically equal to that of bastards. Juliusz Bardach (ed.), *Historia państwa i prawa Polski*, vol. 2 (Warszawa: Państwowe Wydawnictwo Naukowe, 1968), 75.

⁴ Johann Georg Keyßler, *Neueste Reisen durch Deutschland, Böhmen, Ungarn, die Schweiz, Italien und Lothringen* (Nicolai Försters und Sohns Erben: Hannover, 1751), 31.

⁵ These three versions are quoted by William R. Newman and Lawrence M. Principe, "Alchemy vs. chemistry. The etymological origins of a historiographic mistake," *Early Science and Medicine* 3, no. 1 (1998), 32-65, here 53-55. Still another late version was used by Nicholas Lemery in his *Cours de chymie (ars sine arte, cujus principium mentiri, medium laborare, et finis mendicare)*; see John C. Powers, "'Ars sine arte': Nicholas Lemery and the End of Alchemy in Eighteenth-Century France", *Ambix* 45, no. 3 (1998), 163-189, here 174.

⁶ James S. Ackerman, "'Ars Since Scientia Nihil Est': Gothic Theory of Architecture at the Cathedral of Milan", *The Art Bulletin* 31 (1949): 84-111. The episode was made well known by Jacques Le Goff who referred to it in several books.

⁷ Hermann Kopp, *Die Alchemie in älterer und neuerer Zeit. Ein Beitrag zur Culturgeschichte*, Theil II (Heidelberg: Carl Winter's Universitätsbuchhandlung, 1886), 197. Digitised versions of numerous Gretser's writings are available through the website of Herzog-August-Bibliothek: <http://diglib.hab.de>.

⁸ Andreas de Valentia [Johann Valentin Andreae], "Turbo, sive moleste et frustra per cuncta divagans ingenium," in *Theatrum productum* (Helicone, juxta Parnassum [Strasbourg], 1616). The poem is quoted in Act IV, Scene 1. For partial English translation of the play see:

<http://homepages.tesco.net/~eandcthomp/andwturbo.htm>

⁹ Christoph Besold, *De aerario publico discursus* (Tubingae: Cellius, 1615). Reprinted in: *Operis Politici Editio Nova* (Strasbourg: Zetzner, 1626), 63. Besold already quotes it from *Turbo*, so probably from a manuscript version.

¹⁰ Jakob Bornitz, *Tractatus politicus de rerum sufficientia* (Frankfurt: Tampach, 1625), 127.

¹¹ On this interesting person see: “Les sources labyrinthiques du Discours d’auteur incertain sur la pierre des philosophes (1590),” in *La Transmission des savoirs au Moyen Age et à la Renaissance*, vol. 2, ed. Alfredo Perifano (Besançon: Presses universitaires de Franche-Comté, 2005), 223-257; Oswaldus Crollius, *Alchemomedizinische Briefe 1585 bis 1597 (Ausgewählte Werke 2)*, ed. Wilhelm Kühlmann and Joachim Telle (Stuttgart: Franz Steiner Verlag, 1998), 193-195.

¹² He was earlier a close associate of John Dee and Edward Kelley during their stay in Bohemia. In Dee’s diaries he appears as John Carpio. Wilhelm Kühlmann and Joachim Telle (Oswaldus Crollius, *Alchemomedizinische Briefe*, 165-166) call him Caper/Kaper but I have not seen this spelling in any source.

¹³ Josef Teige, *Základy starého místicoisu Pražského (1437-1620). Oddíl I. Staré Město Pražské*, vol. 1 (Praha: Nákladem obce královského hlavního města Prahy, 1910), 812; Oswald Croll, *Basilica chymica* (Frankfurt/M.: Claude de Marne und Erben des Johann Aubry, 1609), Praefatio admonitoria, 94-95.

¹⁴ James Orchard Halliwell, ed. *The Private Diary of Dr. John Dee and the Catalogue of his Library of Manuscripts* (London: Camden Society, 1842), 22 (entry for December 19, 1586). The tone of Dee’s report here and in other places is quite revealing: he treated the transmutation as an experience of deep spiritual significance and at the same time as practical economy, allowing to obtain means to pay for other goods or services, as if it were any other craft.

¹⁵ Ivo Purš, “Anselmus Boëtius de Boodt, Pansophie und Alchemie,” *Acta Comeniana* 18 (2004), 43-90, here 77, note 101. Hájek apparently received some quantity of the tincture from Kelley and later demonstrated its power to Nicolas Barnaud, with his son Simon performing the projection on mercury. Nicolas Barnaud, *Commentariolum in Aenigmaticum quoddam Epitaphium* (Leiden: Basson, 1597), 18-19. The best account of the mysterious Barnaud is: Didier Kahn, “Between Alchemy and Antitrinitarianism: Nicolas Barnaud (ca. 1539–1604?),” in *Socinianism and Arminianism; Antitrinitarians, Calvinists, and cultural exchange in seventeenth-century Europe*, ed. Martin Mulso and Jan Rohls (Leiden: Brill, 2005), 81-96.

¹⁶ Reported by his son-in-law Jan Marek Marci z Kronlandu (1595-1667), famous physician and scientist, rector of the University in Prague, in a letter to Athanasius Kircher (1602-1680): “Idem factum sub Rudolpho Caesare a Keleo, cui transmutationi praesens aderat meus Socer.” Rome, Pontificia Università Gregoriana, Carteggio Kircheriana, 557 f. 96r. Available on-line in the edition of Philip Neal and electronic facsimile: <http://voynichcentral.com/users/philipneal/marciletters.html>.

¹⁷ Václav Březan, *Životy posledních Rožmberků*, ed. Jaroslav Pánek (Praha: Svoboda, 1985), 345.

¹⁸ Morhof quoting Gassendi wrote: “It is universally known that Edward Kelli transmuted metals into gold in the presence of the emperor Rodolphus, and also at Prague, in the house of Thaddeus Hagecius, as you may read in Gassendus’s book of metals, chap. vii.” The translation of the passage is from: John Galt, *The Life*

and *Administration of Cardinal Wolsey*, 3rd ed. (Edinburgh: Oliver & Boyd, 1824), 152.

¹⁹ Johannes Jonston, *Naturae constantia* (Blaeu: Amsterdam, 1632), 77.

²⁰ The record was found in the *International Genealogical Index* by Susan Bassnett, "Absent presences: Edward Kelley's family in the writings of John Dee," in *John Dee: Interdisciplinary studies in English Renaissance thought*, ed. Stephen Clucas (Dordrecht: Springer, 2006), 285-294, here 286. Following her find, I have checked and confirmed it in the original records of St. Swithin parish on microfilm from Family History Library (The Church of Jesus Christ of Latter-day Saints).

²¹ His nobility was already questioned by Daniel Georg Morhof in his *De Metallorum Transmutatione* (Hamburg and Amsterdam, 1673); repr. in *Dissertationes academicae et epistolicae* (Hamburg: Liebernicketel, 1699), 296: "Fuit Kellaeus non Nobilis Anglus, ut quidam putarunt, sed homo plebejus, Notarius & Advocatus Londinensis." (I am grateful to Vera Keller for this reference). It is also the earliest known mention of him as a notary and lawyer. See also: Lawrence M. Principe, "Daniel Georg Morhof's analysis and defence of transmutational alchemy," in *Mapping the world of learning. The Polyhistor of Daniel Georg Morhof*, ed. Françoise Waquet (Wiesbaden: Harrassowitz Verlag, 2000), 139-153, here 149-150. Principe suggests that Morhof's source of information on Kelley was Robert Boyle.

²² See for example: Egerton Brudges, ed. *Collins's Peerage of England; Genealogical, Biographical, and Historical*, vol. 5 (London, 1812), 229-238. The same opinion was expressed by Edward Fenton, ed. *The Diaries of John Dee* (Charlbury, Oxfordshire: Day Books, 1998), 49, note 21.

²³ Fenton, *The Diaries of John Dee*, 45-46. Halliwell's edition omits these notes because they were later erased.

²⁴ Donald C. Laycock, *The Complete Enochian Dictionary* (London: Askin Publishers, 1978), 50.

²⁵ Susan Bassnett, "Absent Presences," 288.

²⁶ Louise Schleiner, *Tudor and Stuart Women Writers* (Bloomington, IN: Indiana University Press, 1994), 263, note 28.

²⁷ Louise Schleiner, "Elizabeth Weston, Alchemist's Step-daughter and Published Poet," *Cauda Pavonis* 10, no. 2 (1991), 8-19. Schleiner proposes that Joan Cooper was Kelley's first wife, while "Lady Weston", the mother of Westonia, was a different person whom Kelley married in Prague. The theory is not very convincing as her argumentation relies heavily on a Czech historical novel by Václav Kaplický, *Život alchymistův* (Praha: Československý spisovatel, 1980).

²⁸ May 28, 1583. Fenton, *The Diaries of John Dee*, 88.

²⁹ July 4, 1583. Fenton, *The Diaries of John Dee*, 97.

³⁰ Carlos Gilly, "'Theophrastia sancta' - Paracelsianism as a religion, in conflict with the established churches," in *Paracelsus. The man and his reputation, his ideas and their transformation*, ed. Ole Peter Grell (Leiden-Boston-Köln: Brill, 1998), 151-186, here 164.

³¹ Fenton, *The Diaries of John Dee*, 333.

³² Fenton, *The Diaries of John Dee*, 231.

³³ John Strype, *Annals of Reformation*, vol. 3, part 2 (Oxford, 1824), 617-620.

³⁴ Michael Wilding, "A biography of Edward Kelly, the English alchemist and associate of Dr. John Dee," in *Mystical metal of gold. Essays on alchemy and Renaissance culture*, ed. Stanton J. Linden (New York: AMS Press, Inc., 2007), 77.

³⁵ A letter quoted by R. J. W. Evans, *Rudolf II and his world. A study in intellectual history 1576-1612*, 2 ed. (Oxford: Oxford University Press (Clarendon Press), 1984), 226.

³⁶ Evans, *Rudolf II*, 226. *Sněmy České od léta 1526 až po naši dobu. VII (1586-1591)* (Praha: Královský Český Archiv Zemský, 1891), 412, No. 267 (Evans has erroneously No. 412). On-line version:

<http://www.psp.cz/eknih/snemy/v070/1589/t026700.htm>. The original in: Praha, Státní ústřední archiv, Desky zemské stavovské (DZSt) 48, fol. B 8.

³⁷ Pavel R. Pokorný, "Pečet' alchemisty Eduarda Kelleye," *Heraldická ročenka*, 1988, 3-4 (with a drawing of the seal). The original document with Kelley's seal is in: Praha, Státní ústřední archiv, Reversy k zemi, 1589, VI. 15 Kelley.

³⁸ Pokorný, 3. The original is in: Praha, Státní ústřední archiv, Desky zemské větší (DZV) 25, fol. B 19v. Václav Březan also recorded the fact in his chronicle but under August 21, probably when Kelley left Třeboň for the land court.

³⁹ John O'Donovan, ed. *The Tribes and Customs of Hy-Many, Commonly Called O'Kelly's Country* (Dublin: Irish Archaeological Society, 1843; repr. Kansas City: Irish Genealogical Foundation, 1992).

⁴⁰ John Strype, *Annals of Reformation*, vol. 3 part 2, 133.

⁴¹ The original (not known to Pokorný) is in: Wien, Österreichisches Staatsarchiv, Allgemeines Verwaltungs-, Finanz- und Hofkammerarchiv, Adelsarchiv (R), Kelleus 1590. The on-line edition by Manfred Staudinger in Documenta Rudolphina: <http://documenta.rudolphina.org/Regesten/A1590-02-23-00902.xml>. A copy is in the British Library, MS Lansdowne 846, fol. 216-217. The diploma was issued to Kelley on February 27, without charging him the normal tax, and at the personal request from the emperor. German translation was published by Alexander Bauer, *Die Adelsdocumente österreichischer Alchemisten und die Abbildungen einiger Medaillen alchemistischen Ursprungs*, (Wien: Alfred Hölder, 1893), 44.

⁴² Praha, Státní ústřední archiv, Desky zemské větší (DZV) 25, fol. G 13.

⁴³ Ivan Sviták, *Hledání kamene mudrců. Rehabilitace pana Edwarda Kelleye* ([Praha]: Samisdat ISIS, 1994), 36-37.

⁴⁴ The original records of all those transactions are still missing. The details of his possessions in Jilové were described by Leopold Čihák, *Paměti královského horního města Jilového a jeho zlatých dolů* (published by the author: Jilové, 1898, 1913); I use the revised edition by his son Václav Čihák (Jilové: Okresní museum v Jilovém, 1948), 154-158. The relevant documents in the municipal archive are not accessible now.

⁴⁵ In Documenta Rudolphina: <http://documenta.rudolphina.org/Regesten/A1591-04-30-01038.xml>.

⁴⁶ As reported by contemporaries; for discussion of different reports see: Wilding, 73.

⁴⁷ Fynes Moryson, *An Itinerary* (London: John Beale, 1617), 16; a modern edition: (Glasgow: James MacLehose, 1907), 32.

⁴⁸ *Notes and Queries*, series 7, vol. 10 (September 6, 1890), 188.

⁴⁹ For example Březan, 360.

⁵⁰ Čihák, 1948, 155; Antonín Rybička, “Ještě něco o městě Jílovém,” *Památky archaeologické a místopisné* 3 (1859), 330-332, here 331. According to Rybička it was the famous Lazar Ercker, the highest master of the mines, who made the report but he died in 1594. Probably it was the continuation of the general survey and regular visitations of mining areas started by Ercker.

⁵¹ Evans, *Rudolf II*, 216; Gilly, “‘Theophrastia sancta’,” 164, note 33.

⁵² Halliwell, *The Private Diary*, 48, 51, 53.

⁵³ Crollius, *Alchemomedizinische Briefe*, No. 14, 73-77. See also: Jaroslava Hausenblasová, “Oswald Croll and his Relation to the Bohemian Lands,” *Acta Comeniana* 15-16 (2002), 169-182, here 170.

⁵⁴ *Ibid.*, No. 20, 88-90; No. 22, 92-96; and Kelley’s biogram, 189-191.

⁵⁵ Max Dvořák, “Dva denníky Dra. Matiaše Borbonia z Borbenheimu,” *Historický Archiv* 9 (1896), 99: “Consignatio nominum quorundam bonorum virorum, qui aliquando mihi litteris fortasse essent compellendi etc. [...] Edoardus Chilaeus Anglus alchimista, qui accepit a Gulielmo barone Rosebergero baronatum unum dono forte propter alchimiam, [...] Osvaldus Crollius Ratisbonae, bonus chemicus.” Compare also: G. Gellner, “Životopis lékaře Borbonia a výklad jeho deníků,” *Historický Archiv* 51 (1938), 92.

⁵⁶ Josef Svátek, *Obrazy z kulturních dějin českých* (Praha: Otto, 1891), 153-154; Documenta Rudolphina: <http://documenta.rudolphina.org/Regesten/A1597-10-13-01448.xml>. Svátek’s book has no references so should be used with caution. On the other hand, many of the concrete factual statements can be confirmed with known primary sources (as is the case here). His information formed the unreferenced basis for the account of the end of Kelley’s life by Charles Nicholl, “The last years of Edward Kelley, alchemist to the Emperor,” *London Review of Books*, 19 April 2001, 3-8.

⁵⁷ *Ottův slovník naučný* (Praha: Otto, 1888-1909), vol. 11, 462.

⁵⁸ Documenta Rudolphina: <http://documenta.rudolphina.org/Regesten/A1597-10-11-01447.xml>.

⁵⁹ Crollius, *Alchemomedizinische Briefe*, No. 23, 97-100. See also p. 156 note 53 on earlier quarrels with Schwärzter.

⁶⁰ Svátek, *Obrazy*, 154.

⁶¹ Svátek, *Obrazy*, 154-155; Petra Chourová, “Edward Kelley v Čechách,” *Časopis Národního muzea, řada historická* 177 (2008), no. 1-2, 26-54, here 50-53.

⁶² A manuscript in Vienna, quoted by Svátek, *Obrazy*, 156. The information is not reliable because the manuscript has not been identified. The one inspected by Evans (*Rudolf II*, 217) may or may not be the same.

⁶³ Svátek, *Obrazy*, 155.

⁶⁴ A. V. Holejšovský, “Žila Vestonie v Jílovém,” *Heraldika* 8 (1975), no. 2, 37-49, here 46. The original is in: Praha, Státní ústřední archiv, Desky zemské větší (DZV) 128, D 25, 17 2.

⁶⁵ Andreas Libavius, *D.O.M.A. Syntagmatis arcanorum chymicorum, tomi secundi, tractatus primus: De igni naturae* (Frankfurt: Hoffmann, 1613), 34 (the copy in the Poznań University Library has the publication year misprinted as 1660). Bruce T. Moran, “Libavius the Paracelsian? Monstrous novelties, institutions, and the norms of social virtue,” in *Reading the Book of Nature. The Other Side of the Scientific Revolution*, ed. Allen G. Debus, Michael T. Walton (St. Louis: Sixteenth Century Journal Publishers, 1998), 67-80, here 72.

⁶⁶ Manuel Bachmann, Thomas Hofmeier, *Geheimnisse der Alchemie* (Basel: Schwabe, 1999), 175. The phrase “anno post secularem proximum tertio” is variously interpreted as 1602 or 1603 by different authors, depending on whether the year 1600 is counted as already belonging to the new century. Zwinger’s enthusiastic reports about it to his correspondents start in February 1604, however, so it is reasonable to accept the 1603 dating of the transmutation.

⁶⁷ Johann Wolfgang Dienheim, *Medicina universalis seu de generali morborum omnium remedio liber* (Strassburg: Zetzner, 1610), 64-68.

⁶⁸ Theodor Zwinger [great-grandson of Jacob], ed., “De Chrysopoeia variae litteratorum epistolae,” *Miscellanea curiosa sive Ephemeridum medico-physicarum Germanicarum Academia imperialis Leopoldinae naturae curiosorum*. Decuriae II. Annus nonus, Annus M.DC.XC. (Nürnberg, 1691), 16-41. There are 14 letters by Jacob Zwinger dated between 1604 and 1608, written to several people, including Andrea Libavius. The originals survive in Basel and were studied by Włodzimierz Hubicki, who questioned the authenticity of the first letter, addressed to Sebastian Schöbinger: “The Mystery of Alexander Seton - Cosmopolite”, in *XIVth International Congress of the History of Science in Tokyo and Kyoto, Japan 1974. Proceedings* (Tokyo: Science Council of Japan, 1975), 397-400; repr. in *Z dziejów chemii i alchemii* (Warszawa: Wydawnictwa Naukowo-Techniczne, 1991), 90-92.

⁶⁹ Rafał T. Prinke, “The twelfth adept,” in *The Rosicrucian Enlightenment Revisited*, ed. Ralph White (Hudson, NY: Lindisfarne Books, 1999), 141-192, here 168.

⁷⁰ Bruce T. Moran, “Alchemy, Prophecy, and the Rosicrucians: Raphael Eglinus and Mystical Currents of the Early Seventeenth Century,” in *Alchemy and Chemistry in the 16th and 17th Centuries*, ed. Piyo Rattansi and Antonio Clericuzio (Dordrecht: Kluwer Academic Publishers, 1994), 103-120, here 105.

⁷¹ Eugène Olivier, “Bernard G[illes] Penot (Du Port), médecin et alchimiste (1519-1617),” ed. Didier Kahn, *Chrysopoeia* 5 (1992-1996), 571-668.

⁷² Johann Hartmann, the Marburg professor of chymiatry, learned about Seton’s death from Jacob Zwinger and passed the information on to Joseph Duchesne (Quercetanus) in a letter dated 29 September 1606. Julian Paulus, “Alchemie und Paracelsismus um 1600. Siebzig Portäts,” in *Analecta Paracelsica. Studien zum Nachleben Theophrast von Hohenheims im deutschen Kulturgebiet der frühen Neuzeit*, ed. Joachim Telle (Stuttgart: Franz Steiner Verlag, 1994), 335-406, here 365, note 204.

⁷³ Penot informed Zwinger in a letter dated April 11, 1608 that Seton was in Poland and very ill. Olivier, "Bernard G[illes] Penot," 631 (I am indebted to José Rodríguez Guerrero for bringing this reference to my attention).

⁷⁴ William Pinkerton, "Alexander Seton, the Scottish Alchemist," *Notes and Queries*, Third Series, IV (September 26, 1863), 245-246. His "careful examination of Maitland's *Genealogy of the House and Surname of Seton*, and other Scottish genealogical works, has thrown no light on the question". Similar research was undertaken by Adam McLean with similar conclusions: "I have looked at a number of the reference works on the Seton family [...]. If there ever was an Alexander Seton, he was not part of this noble family." (private communication, October 6, 1997).

⁷⁵ Published by Fr. von Weech in *Zeitschrift für Geschichte des Oberrheins*, Bd. 26 (1874), 469: "ein Schottländer, der sich Alexander Sydon, hernach an andern orten Sylon und auch Stuuard genennet".

⁷⁶ Friedrich Greiff, *Decas nobilissimorum medicamentorum* (Tübingen: Brunnius, 1641), 30.

⁷⁷ Michael Maier, *Symbola aureae mensae duodecim nationum* (Frankfurt: Hummius/Iennis, 1617), p. 481

⁷⁸ Friedrich Roth-Scholtz, "Vorbericht an der Leser", in *Michaelis Sendivogii chymische Schriften* (Nürnberg: Tauber, 1718), 13.

⁷⁹ Otakar Zachar, "Rudolf II. a alchymisté," *Časopis Musea Království Českého* 86 (1912), 417-424, 87 (1913), 148-257; Hubicki, "The Mystery of Alexander Seton". Hubicki also lists three other of Seton's aliases: Ramsay, Couthone, Casaubone, but without source references. Couthone is obviously a version of Conthonius used by Libavius. On Scotto see also: Carl Kiesewetter, "Der Zauberer Jeronimo Scotto," in *Faust in der Geschichte und Tradition. Mit besonderer Berücksichtigung des occulten Phänomenalismus und des mittelalterlichen Zauberes* (Leipzig: Spohr, 1893; repr. Hildesheim: Georg Olms Verlag, 1963), Teil 2, 272-286; Evans, *Rudolf II*, 210.

⁸⁰ Evans, *Rudolf II*, 227.

⁸¹ A. Rupert Hall, "Isaac Newton and the aerial nitre," *Notes and Records of the Royal Society of London* 52 (1998), no. 1, 51-61, here 56.

⁸² Roman Bugaj, *Michał Sedziwój (1566-1636). Życie i pisma* (Wrocław: Ossolineum, 1968); Włodzimierz Hubicki, "The True Life of Michael Sendivogius", in *Actes du XIe Congrès International d'Histoire d'Sciences* (Wrocław-Warszawa-Kraków: PAN, Ossolineum, 1968), vol. 4, 51-55; *ibid.*, "Sendivogius," in *Dictionary of Scientific Biography*, ed. C. C. Gillespie (New York: Charles Scribner's Sons, 1970-1980), vol. 12, 306-308; Prinke, "The twelfth adept."

⁸³ Daniel Georg Morhof, *De metallorum transmutatione* (Hamburg: Schultze, 1673); repr. in Jean-Jacques Manget, ed., *Bibliotheca chemica curiosa* (Geneva: Chouet, 1702), vol. 1, 189: "Relatio Budovskii Oeconomi Sendivogiani fidem non meretur".

⁸⁴ Karolina Targosz, "Correspondance scientifique de Pierre Des Noyers et d'Ismael Boulliau – fragment de l'histoire des relations scientifiques franco-polonaises au XVIIe siècle," in *Etudes d'Histoire de la Science et de la Technique* :

XIII-e Conges International d'Histoire des Sciences : [Moscow 1971] : Section II (Varsovie: Institut d'Histoire de la Science et de la Technique aupres de l'Academie Polonaise des Sciences, 1971), 19-29; François Secret, "Astrologie et alchimie au XVIIe siècle: un ami oublié d'Ismaël Boulliau – Pierre des Noyers, secrétaire de Marie-Louise de Gonzague, reine de Pologne," *Studi Francesi* 60 (1976), 463-479; Robert A. Hatch, "Between Erudition and Science: The Archive and Correspondence Network of Ismaël Boulliau," in *Archives of the Scientific Revolution: The Formation and Exchange of Ideas in Seventeenth-century Europe*, ed. Michael Hunt (Woodbridge: Boydell & Brewer, 1998), 49-72. For a general overview of the intellectual milieu of the Polish queen's court see: Karolina Targosz, *Uczony dwór Ludwika Marii Gonzagi (1646-1667). Z dziejów polsko-francuskich stosunków naukowych*, Monografie z Dziejów Nauki i Techniki vol. C (Wrocław: Ossolineum, 1975); an abridged version in French translation: *La cour savante de Louise Marie de Gonzague et les liens scientifiques avec la France (1646-1667)* (Wrocław: Ossolineum, 1982).

⁸⁵ I have done that point by point in "The twelfth adept."

⁸⁶ Karolina Targosz, *Hieronim Pinocci. Studium z dziejów kultury naukowej w Polsce w XVII wieku* (Wrocław: Ossolineum, 1967). This is the fundamental monograph on Pinocci, including the reconstructed catalogue of his library, comprising 1874 books and manuscripts. Interestingly, he used different anagrams for writing in different languages, in which he was fluent: Nicephorus Nicoymuis (Latin), Poliarco Micigno (Italian), Cyprian Miechoni (Polish), Ermes-Pio Ciconii (French), Remigio Conopi (Spanish). Thanks to this curious habit, it seems quite certain that his letter on Sendivogius was indeed originally written in Italian, as claimed by its publishers.

⁸⁷ Wilhelm Ganzenmüller, "Das chemische Laboratorium der Universität Marburg im Jahre 1615", in *Beiträge zur Geschichte der Technologie und der Alchemie* (Weinheim: Verlag Chemie, 1956), 314-321, here 317; Włodzimierz Hubicki, "Uczniowie z Polski na studiach chymiatрії w Marburgu w latach 1609-1620," in *Studia i Materiały z Dziejów Nauki Polskiej*, Seria A, 12 (1968), 70-103; repr. in *Z dziejów chemii i alchemii*, 192-211 (with corrected readings of names of students from the area of the Polish-Lithuanian Commonwealth).

⁸⁸ Bugaj, *Michał Sędziwój*, 141.

⁸⁹ Hubicki, "Uczniowie," 206, notes that he found no record of Sendivogius's visit in the archives of Marburg and Kassel, nor any letter to or from Sendivogius in the alchemical correspondence of Landgrave Moritz. The authority on Moritz's alchemical interests, Bruce T. Moran, kindly informed me that he did not find any relevant information confirming that visit, either.

⁹⁰ Newman, *Gehennical fire*, 7.

⁹¹ Olaus Borrichius [Ole Borch], *De ortu et progressu chemiae dissertatio* (Hafniae: Haubold, 1668), 144-145. He refers to the letter of Des Noyers.

⁹² Ole Borch, *Olai Borrichii Itinerarium 1660-1665. The Journal of the Danish Polyhistor Ole Borch*, ed. H. D. Schepelern, vol. 3 (Copenhagen: The Danish Society of Language and Literature, 1983), 412-413: "qvam postea scripsit

Digbaeo sibi qvodammodo succedere. Cosmopolitam fuisse Alexandrum Sethon Scotum (i.e. Alex: Sidonium)."

⁹³ Petrus Borrelius [Pierre Borel], *Bibliotheca chimica seu catalogus librorum philosophicorum hermeticorum* (Heidelberg: Broun, 1656); repr. ed. Rudolf Schmitz (Hildesheim: Georg Olms Verlag, 1969), 63-64, 200.

⁹⁴ Bartosz Paprocki, "List," in *Ogrod krolewsky* (Praha: Daniel Sedlčanský, 1599), 146v.

⁹⁵ Polish nobility had a clan system in which many families used the same coat of arms and were identified by its name (*proclamatio*). Each heraldic clan claimed common origins and developed legends about its mythical founder, later recorded (and certainly in many cases invented) by Paprocki in *Herby rycerstwa polskiego* (Kraków: Maciej Garwolczyk, 1584).

⁹⁶ I have discussed it in detail in: "Michał Sędziwój - pochodzenie, rodzina, herb," *Gens. Kwartalnik Towarzystwa Genealogiczno-Heraldycznego w Poznaniu* 3 (1992), no. 2, 33-49. The supposed father of Stefan Sędzimir, Ścibor Ściborowic, is known to have had only one daughter who married a Hungarian magnate.

⁹⁷ Bogdan Henryk Łuszczynski, "Silva Heraldica, rodowody i inny materiał do rodopistwa z akt grodzkich i ziemskich b. województwa krakowskiego i innych archiwów akt dawnej Rzeczypospolitej Polskiej," vol. 12 (X), Warsaw, Biblioteka Narodowa (rkps. IV 6593), 377-425.

⁹⁸ Władysław Semkowicz, "Wywody szlachectwa w Polsce XIV-XVII. w.," *Rocznik Towarzystwa Heraldycznego we Lwowie* 3 (1911-1912), nr 216, 123-124. The original is in: Kraków, Archiwum Państwowe, Acta Castrensia Sandecensia, vol. 108, pag. 387.

⁹⁹ Josef Svátek, *Culturhistorische Bilder aus Böhmen* (Wien: Braumüller, 1879), 78.

¹⁰⁰ Svátek, *Obrazy*, 52-53.

¹⁰¹ John Venn and John Archibald Venn, ed., *Alumni Cantabrigienses: a biographical list of all known students, graduates and holders of office at the University of Cambridge, from the earliest times to 1900. [Part 1:] From the earliest times to 1751. Part 2: From 1752 to 1900*, 10 vols. (Cambridge: Cambridge University Press, 1922-1954; repr. 1974-1978). I used both the printed edition and the electronic database edition on CD-ROM from Ancestry.com to search it in various ways.

¹⁰² Robert F. Young, "Bohemian scholars and students at the English universities, 1347-1750," *English Historical Review* 38 (1923), 72-84, here 75; Michal Svatoš, "Tadeáš Hájek z Hájku a pražská univerzita," in *Tadeáš Hájek z Hájku*, ed. Pavel Drábek, *Práce z dějin techniky a přírodních věd* (Praha: Společnost pro dějiny věd a techniky, 2000), 25-33, here 32.

¹⁰³ Jacqueline Cox of the Cambridge University Archives kindly informed me that *Alumni Cantabrigienses* is generally believed to be complete and accurate but persons studying informally would not have left any trace in the official records.

¹⁰⁴ Paweł Czaplewski, *Polacy na studiach w Ingolstadtzie* (Poznań: Poznańskie Towarzystwo Przyjaciół Nauk, 1914).

¹⁰⁵ Stanisław Tomkowicz, ed., “Metrica nec non liber nationis Polonicae Universitatis Lipsiensis ab anno 1409 usque ad 1600, z rękopisów Uniwersytetu lipskiego,” *Archivum do Dziejów Oświaty* 2 (1882), 409-467, here 437; also published separately (Kraków, 1881), 29.

¹⁰⁶ Franz Gall, *Die Matrikel der Universität Wien. IV. Band 1579/II-1658/59. 1. Lieferung* (Graz-Köln: Institut für Österreichische Geschichtsforschung / Verlag Hermann Böhlaus Nachf., 1961), 33.

¹⁰⁷ Stanisław Bąk, “Powstanie i rozwój nazwy Sandomierz,” *Prace Filologiczne* 16 (1934), 231-248; Stanisław Rospond, *Słownik etymologiczny miast i gmin PRL* (Wrocław: Zakład Narodowy im. Ossolińskich, 1984), 341.

¹⁰⁸ Jaroslava Hausenblasová, ed., *Der Hof Kaiser Rudolfs II. Eine Edition der Hofstaatsverzeichnisse 1576-1612*, *Fontes historiae artium* (Praha: Artefactum, 2002), 276-277.

¹⁰⁹ Elias von Steinmeyer, ed. *Die Matrikel der Universität Altdorf*, 2 vols., vol. 1, Veröffentlichungen der Gesellschaft für Fränkische Geschichte (Würzburg: Universitätsdruckerei H. Stürtz, 1912), 51.

¹¹⁰ Johann Gottfried Biedermann, *Geschlechts-Register der Reichs-Frey-unmittelbaren Ritterschaft Landes zu Francken löblichen Orts Gebürg* (Bamberg, 1747; repr. Neustadt an der Aisch: Verlag für Kunstreproduktionen, Christoph Schmidt, 1984), Tabula CCXXVIII-CCXLIV. I am indebted to Dieter Weiss for copies of relevant pages. See also: Otto Graf Seefried, *Aus dem Stiebar-Archiv. Forschungen zur Familiengeschichte von Bauer, Bürger und Edelman in Ober- und Mittelfranken* (Nürnberg: Verlag die Egge, 1953).

¹¹¹ Barbara Gebhardt and Manfred Hörner, *Bayerisches Hauptstaatsarchiv. Reichskammergericht. Band 1* (München: Selbstverlag der Generaldirektion der Staatlichen Archive Bayerns, 1994), Nr. 15, 18, 46. I have not been able to see the original documents yet, so the reconstruction of the genealogy is based on the summaries of cases in this detailed guide to the collection.

¹¹² Johann Gottfried Biedermann, *Geschlechtsregister der Reichsfrey unmittelbaren Ritterschaft Landes zu Franken löblichen Orts an der Altmühl* (Bayreuth, 1748; repr. Neustadt an der Aisch: Verlag für Kunstreproduktionen, Christoph Schmidt, 1987), Tabula CLXXII, CXCVI; Heinrich Wilhelm, “Die Edlen von und zum Absberg. Ein Beitrag zur fränkischen Geschichte,” *Alt-Gunzenhausen* 8 (1931), 3-197, here 125-128. I am indebted to Peter Braun and Hilla Zmora for their help with accessing these publications.

¹¹³ Peter G. Bietenholz, Thomas B. Deutscher, ed., *Contemporaries of Erasmus: A Biographical Register of the Renaissance and Reformation*, vol. 3 (Toronto: University of Toronto Press, 1985), 287-288; Eva Mayer, “Daniel Stiebar von Buttenheim and Joachim Camerarius,” *Würzburger Diözesangeschichtsblätter* 14-15 (1952-1953), 485-499.

¹¹⁴ Sendivogius to Rudolf II, Prague, February 10, 1597. Wien, Österreichisches Staatsarchiv, Haus-, Hof- und Staatsarchiv, Habsburgisch-Lothringische Hausarchive, Familien-Korrespondenz A, Karton 4, fol. 271, 274. Electronic edition by Manfred Staudinger in Documenta Rudolphina:

<http://documenta.rudolphina.org/Regesten/A1597-02-10-01404.xml>.

¹¹⁵ Svátek, *Obrazy*, 145.

¹¹⁶ Čihák, *Paměti*, 155.

¹¹⁷ Praha, Archiv hlavního města Prahy, rkp. č. 1168, fol. 208v.

¹¹⁸ Teige, *Základy*, 813.

¹¹⁹ Svátek, *Obrazy*, 158.

¹²⁰ Elizabeth Jane Weston, *Collected Writings*, ed. and tr. Donald Cheney and Brenda M. Hosington (Toronto: University of Toronto Press, 2000), 338-339. Karel Hrdina, "Dvě práce z dějin českého humanismu," *Listy filologické* 55 (1928), 16-19, here 17 (he assumes the same year 1606 for Joan Kelley's death).

¹²¹ Holejšovský, "Žila Vestonie, 46.

¹²² Praha, Archiv hlavního města Prahy, rkp. č. 1168, fol. 210.

¹²³ Anna Pawlaczyk and Rafał T. Prinke, "Dwa listy Zygmunta III Wazy do cesarza Rudolfa II w sprawie alchemika Michała Sędziwoja," *Pamiętnik Biblioteki Kórnickiej* 27 (2005), 127-134.

¹²⁴ Krzysztof Chłapowski, *Ordynacja dworu Zygmunta III z 1589 roku* (Warszawa: Wydawnictwo Neriton, Instytut Historii PAN, 2004). This publication deals with an earlier period but the author did extensive research in all available sources for the reign of Zygmunt III and kindly informed me that Sendivogius was not listed in any of them and therefore was not formally employed by the king.

¹²⁵ The fragment of that letter was published in Polish translation from the notes of Tadeusz Czacki by Ambroży Grabowski, *Skarbniczka naszej archeologii* (Leipzig: Księgarnia Zagraniczna, 1854), 198, and in "Z Radomia. Wspominek o Sędziwoju," *Kurier Warszawski*, 1859 (23 IV), nr 119, 607. The original was said to have been in a "Parisian library" by which he may have meant Bibliothèque Polonaise à Paris.

¹²⁶ Praha, Archiv hlavního města Prahy, rkp. č. 1168, fol. 204.

¹²⁷ Praha, Státní ústřední archiv, Vereinigte böhmisch-österreichische Hofkanzlei, Salbücher, Register No. 168, f. 420-420v. It is catalogued under 1603 but the year on the document is quite certainly 1601. I am indebted to Pavel Pokorný for finding this charter.

¹²⁸ Svátek, *Obrazy*, 158; Chourová, "Edward Kelley," 52-53.

¹²⁹ Zikmund Winter, "Kámen filosofský," *Květy* 15 (1893), 199 (reprinted several times); *ibid.*, *Život Církevní v Čechách: Kulturně-historický obraz z XV. a XVI. století* (Praha: Nákladem České akademie císaře Františka Josefa pro vědy, slovesnost a umění, 1895), 333.

¹³⁰ Weston, *Collected Writings*, 46-49. The editors could not identify Belvic.

¹³¹ Walther Pfeilsticker, *Neues württembergisches Dienerbuch*, Bd. 1 (Stuttgart: Cotta, 1957), No. 1843.

¹³² It was reported in print by Libavius, Pinocci, and others.

¹³³ Claus Priesner and Karin Figala, *Alchemie. Lexikon einer hermetischen Wissenschaft* (München: C. H. Beck, 1998), 243-244.

¹³⁴ A detailed discussion of this affair is beyond the scope of this article. I intend to deal with it separately.

¹³⁵ Merseburg, Geheime Staatsarchiv Preußischer Kulturbesitz [formerly Deutsches Zentralarchiv], Abteilung Merseburg, Rep. 6 Nr. 13, Fasz. 4, Proceres

Regni Poloniae and Verzeichnis der polnischen Präsenten. Quoted by Barbara Janiszewska-Mincer, *Rzeczpospolita Polska w latach 1600-1603 (Narastanie konfliktu między Zygmuntem III Wazą a stanami)* (Bydgoszcz: Wyższa Szkoła Pedagogiczna w Bydgoszczy, 1984), 49.

¹³⁶ There is no modern monograph on Wolski. The most important biographical sketch remains: Ludwik Zarewicz, "Wspomnienia o Mikołaju Półkozicu Wolskim, Marszałku w. kor.," in *Zakon Kamedułów, jego fundacye i dziejowe wspomnienia w Polsce i Litwie. Przeważnie według źródeł rękopiśmiennych archiwu OO. Kamedułów w Bielanych przy Krakowie* (Kraków: Władysław Jaworski, 1871). For his contacts with Sendivogius see: Czesław Lechicki, "Marszałek Mikołaj Wolski i alchemik Sędziwój," in *Prace historyczne wydane ku uczczeniu 50-lecia Akademickiego Koła Historyków Uniwersytetu Jana Kazimierza we Lwowie 1878-1928* (Lwów, 1929). The latter is highly unreliable and should be used with care.

¹³⁷ *Kronika Pawła Piaseckiego, biskupa przemyskiego*, tr. Antoni Chrząszczewski (Kraków: Drukarnia Uniwersytetu Jagiellońskiego, 1870), 132.

¹³⁸ Warszawa, Archiwum Główne Akt Dawnych, Dział XVIII, Lustracje 23, Lustracja starostwa krzepickiego 1636.

¹³⁹ Benedykt Zientara, *Dzieje małopolskiego hutnictwa żelaznego. XIV-XVII wiek* (Warszawa: Państwowe Wydawnictwo Naukowe, 1954), 248-253.

¹⁴⁰ Roman Bugaj, *Michał Sędziwój*, 136, wrongly assumes it was the same person as the rector but he had died in 1600. See: Franciszek Giedroyc, *Źródła biograficzno-bibliograficzne do dziejów medycyny w dawnej Polsce* (Warszawa: K. Kowalewski, 1911; repr. Warszawa: Wydawnictwa Artystyczne i Filmowe, 1981), 900-910.

¹⁴¹ Archiwum Państwowe, Kraków, Castrensia Cracoviensia, pag. 725-726.

¹⁴² Archiwum Państwowe, Kraków, Castrensia Cracoviensia 1175, pag. 489. Quoted and partially reproduced in: Waclaw Urban, "Podpisy małopolskich intelektualistów XVI-XVII w.," *Biuletyn Biblioteki Jagiellońskiej* 36, no. 1/2 (1986), 73 and fig. 8.

¹⁴³ Stanisław Tomkowicz, *Przyczynki do historii kultury Krakowa w pierwszej połowie XVII wieku* (Lwów: Towarzystwo dla Popierania Kultury Polskiej, 1912), 277-280.

¹⁴⁴ Archivio di Stato, Archivio Gonzaga, Mantua, busta 559, nr 433. The letter was discovered by Lech Szczucki in 1984 and published by him in "Fragmenta mantuana," *Studia Polonistyczne* 18/19 (1992), 197-201.

¹⁴⁵ Kraków, Archiwum Państwowe, Jurydyki IV-20, pag. 441-444, 507-510, 681-683.

¹⁴⁶ Jerzy Banach, *Dawne widoki Krakowa* (Kraków: Wydawnictwo Literackie, 1983).

¹⁴⁷ Walerian Nekanda Trepka, *Liber generationis plebeanorum (Liber chamorum)*, ed. Włodzimierz Dworzaczek et al. (Wrocław-Warszawa-Kraków: Ossolineum, 1963), 465-466. A new popular edition of the same manuscript by Rafał Leszczyński (Wrocław-Warszawa-Kraków: Ossolineum, 1995), 352.

¹⁴⁸ Kraków, Archiwum Państwowe, Jurydyki IV-21, pag. 96-97.

¹⁴⁹ Stanisław Kleczewski, *Kalendarz Seraficzny zamykający w sobie żywoty wielbnych Sług Boskich Zakonu S. O. Franciszka Reformatów Polskich osobliwą swiętobliwoscia znamienitych* (Lwów: Drukarnia J. K. M. i Bractwa Świętej Trójcy, 1760), LIX-LXI. It is quoted from a chronicle which does not seem to survive. A surviving chronicle in the library of the Reformed Franciscans in Cracow does not include the eagle episode but otherwise corroborates Kleczewski's account.

¹⁵⁰ Kraków, Archiwum Państwowe, Castrensia Cracoviensia, Inscriptiones 222, pag. 110-113.

¹⁵¹ Jan Pasiecznik, *Kościół i klasztor reformatów w Krakowie* (Kraków: Wydawnictwo Literackie, 1978), 34-35.

¹⁵² Kraków, Archiwum Państwowe, Castrensia Cracoviensia, Relationes 51, pag. 639-642.

¹⁵³ Christian Ritter d'Elvert, *Beiträge zur Geschichte der böhmischen Länder, insbesondere Mährens, im siebzehnten Jahrhunderte*, vol. 3 (Brünn: Verlag der historisch-statistischen Sektion; Karl Winiker, 1875), 445.

¹⁵⁴ *Ibid.*, 431.

¹⁵⁵ Josef Zukal, "Alchymista Michal Sendivoj pánem na Kravařích a Koutech," *Věstník Matice Opavské* 17 (1909), 1-8, here 3.

¹⁵⁶ I am indebted to Vladimír Spáčil, a leading authority on the history of Olomouc, for checking municipal records and other resources for me. He found no mention of Sendivogius but on the other hand he is known to have asked the emperor for it and Pinocci says he had it, which is independently confirmed by an anonymous biographical note from Sendivogius's lifetime (Warszawa, Biblioteka Uniwersytecka, Gabinet Rycin 477).

¹⁵⁷ Roma, Pontificia Universita Gregoriana, Carteggio Kircheriana, 564, fol. 95r-96v. Digital reproductions available on the website of Athanasius Kircher Correspondence Project, <http://archimede.imss.fi.it/kircher/>.

¹⁵⁸ Gellner, "Životopis lékaře Borbonia", 114; Dvořák, "Dva denníky", 108.

¹⁵⁹ Croll, *Basilica chymica*, Praefatio admonitoria, 94.

¹⁶⁰ Zukal, "Alchymista," 7.

¹⁶¹ See for example: Zbigniew Sztybel, *Water Which Does Not Wet Hands. The Alchemy of Michael Sendivogius* (Warszawa: Polish Academy of Sciences, Institute for the History of Science, 1994); William T. Lynch, *Solomon's Child: Method in the Early Royal Society of London* (Stanford, CA: Stanford University Press, 2001), 67; Donald R. Dickson, "Thomas Henshaw and Sir Robert Paston's pursuit of the red elixir: An early collaboration between fellows of The Royal Society," *Notes and Records of the Royal Society* 51 (1997), no. 1, 57-76.

¹⁶² See especially: Betty Jo Teeter Dobbs, *The Foundations of Newton's Alchemy or "The Hunting of the Greene Lyon"* (Cambridge: Cambridge University Press, 1975). Richard Westfall, "The Role of Alchemy in Newton's Career," in *Reason, Experiment, and Mysticism in the Scientific Revolution*, ed. M. L. Righini Bonelli and William R. Shea (New York: Science History Publications, 1975); *ibid.*, *Never at Rest. A Biography of Isaac Newton* (Cambridge: Cambridge University Press, 1980); *ibid.*, "Newton and Alchemy," in *Occult and Scientific Mentalities in the*

Renaissance, ed. Brian Vickers (Cambridge: Cambridge University Press, 1984); William R. Neman, "Newton's Theory of Metallic Generation in the Previously Neglected Text 'Humores minerales continuo decidunt'," in *Chymists and Chymistry. Studies in the History of Alchemy and Early Modern Chemistry*, ed. Lawrence M. Principe (Sagamore Beach: Chemical Heritage Foundation and Science History Publications, 2007), 89-100.

¹⁶³ Lavoisier's own copy of the French 1723 edition of the works of Sendivogius is now in Cornell University Library, Division of Rare and Manuscript Collections in Ithaca (shelfmark: Lavoisier/QD/25/S47/1723).

¹⁶⁴ Examples are: "Jak magik z Krakowa nabral śląskiego zbójnika," in *Legenda i baśnie śląskie*, ed. Stanisław Wasylewski (Katowice: Ognisko, 1947); "Pověsti a povědačky," in Hořká, Ludmila. *Národopisné paběrky z Hlučínska*, ed. 2 (Kravaře : Kulturní středisko zámek Kravaře, 2002), 27-37.

¹⁶⁵ The most important of those include: Józef Bohdan Dziekoński, *Sędziwój*, vol. 1-3 (Warszawa, 1845; ed. 2: Warszawa, 1907; ed. A. Gromadzki, PIW : Warszawa, 1974 and later reprints), on-line ed. Marek Adamiec and Helena Draganik, Wirtualna Biblioteka Literatury Polskiej (UNESCO Project), Uniwersytet Gdański, <http://monika.univ.gda.pl/~literat/sedziwoj>; Josef František Karas, *Polský čert* (Praha: B. Kočí, 1924); Gustav Meyrink, "Die Abenteuer des Polen Sendivogius," in *Goldmachergeschichten* (Berlin: Scherl, [1925]; repr. Darmstadt: Verlag Wolfgang Roller, 1989), 195-261; Jadwiga Żylińska, *Kawaler Christian Rosenkreutz*, in *Do kogo należy świat?* (Warszawa: PIW, 1977), 149-186; Wacław Szymanowski, "Michał Sędziwój. Dramat w pięciu aktach," in *Poezje i dramata*, vol. 2 (Warszawa: Gebethner i Wolff, 1884). Possible influence of Sendivogius on Elizabethan drama was discussed by Stanton J. Linden, "Jonson and Sendivogius: Some New Light on Mercury Vindicated from the Alchemists at Court," *Ambix* 24 (1977), 39-54. Compare also: Charles Nicholl, *The chemical theatre* (London - Boston - Henley: Routledge & Kegan Paul, 1980).

THE SINGULARITY OF ALCHEMICAL EXPERIENCE: THE CASE OF CAMILLO BALDI

BRUCE T MORAN,
UNIVERSITY OF NEVADA AT RENO

Recent literature has amply demonstrated the extent to which alchemy mattered in the seventeenth century and has described many of the ways in which it attracted the attention of both lay and learned. On the one hand, alchemy expressed itself as an erudite subject defined within the boundaries of specific theoretical and textual traditions. Alchemical practices distanced themselves from the obscurity of earlier periods and were increasingly framed by procedural outlines built upon the use of more consistent terminology and replicable methods. To leave matters like that, however, would be to focus only upon one part of alchemy's rich historical existence. Then, as in other times, alchemy also survived in a less formal milieu, more an artifact of culture than an explicit profession or occupation. In that domain it languished within the patterns of the period's cultural wallpaper, often unacknowledged but dramatically present in the lived experience of daily life. Alchemical reasoning served more than one rationale. While it shaped a specific category of knowledge, it also survived as an intellectual habit, one that could transfer over into new situations as a routine way of ordering the world. As strange as it may seem, not all those attracted to alchemy were alchemists. In a variety of ways the habit of alchemical reasoning mapped on to personal agendas and figured into private angles of observation by means of which something got explained, gained a purpose, or came to occupy a special place in a desired natural order.

Digging out examples of the culturally ordinary is a difficult job. Alchemy here is almost an invisible object – like the shears in the garden shed, out of sight but nevertheless ready to hand when something important needs trimming. Regardless of the difficulty in finding them, however, some documents stemming from the late sixteenth and early seventeenth centuries bear witness to cases in which alchemy figured into

private approaches to the world and connected to matters of immediate personal importance. The place of alchemy in such circumstances was never a formal place, not one endorsed by reputation or confirmed by institutional sanction. No one applying alchemical reasoning of this sort was a recognized authority in alchemical debate. Nevertheless, to each alchemy was more than simply something to report about. It was a living subject, a dynamic option within a private world of relationships called upon in special instances to give shape and meaning to individual desires, curiosities, and experiences. I want to get closer to this private, more casual side of alchemical acquaintance and to infiltrate, as it were, the singularity of alchemical experience where it exists apart from the well recognized sites of scholarly debate and courtly patronage. To do that, I have chosen on this occasion to focus upon the alchemical desires and motives of a Bolognese professor of natural philosophy who believed, among other things, that he could know a person's character by means of his or her physical appearance and by the way he or she wrote a letter. His name is Camillo Baldi (1551-1637).¹

Baldi was a well connected member of the cultural elite in Bologna. His father, Piermaria di Giovanni Baldi, held chairs at the university in logic and philosophy from 1542 to his death in 1568.² Camillo, who studied at Bologna, ended up with the same degrees (philosophy and medicine) and almost the very same job. After a brief period teaching logic he became lecturer of extraordinary philosophy at Bologna. Thereafter, as ordinary professor and *protologicus*, he once again taught logic and Aristotelian natural philosophy, including, as was part of normal university instruction, Aristotle's *Meteorologica* with its emphasis upon elemental change and the nature of perfectly and imperfectly mixed bodies.³ Sometime in the course of a career that lasted almost sixty years he followed Giovanni Cornelio Utervario as custodian of the museum in Bologna containing objects from the collection of Ulisse Aldrovandi (1522-1605). Baldi possessed a medical degree, but never taught medicine. However, as *protomedico*, he served the College of Medicine, and functioned from time to time as a medical examiner -- in one case working with the famous Bolognese surgeon, Gaspare Tagliacozzi (1545-1599) to establish the competency of an applicant seeking the College's approval to practice medicinal pharmacy.⁴ For his service to the university he became one of the highest paid members of the arts and sciences, and received accolades as well from Bologna's city fathers.⁵ When, in 1593, the Senate of Bologna honored the public works of several of its recent citizens, including Aldrovandi, Baldi was himself invested as "Magistrate of the Ancient Gonfaloniere."⁶

In some of his writings Baldi became involved in unfolding contemporary debate about the operations of nature. One text, often mentioned without actually having been seen, seems to have challenged four of Galileo's propositions concerning the movement of water, a reaction either to Galileo's *Dialogue* or to the earlier *Discorso sul flusso e il reflusso del mare* (1616).⁷ In other texts he expressed personal attitudes concerning nature and the body. In particular, he looked to nature for signs revealing hidden qualities and powers, and looked to the human body for marks indicating individual moral traits. He was, of course, not alone in doing so. His commentaries on the *Physiognomica* attributed to Aristotle (1621), joined the texts of della Porta and others claiming, as della Porta observed, that as "the soul alters character [*habitus*], the body's complexion, and its practices [*mores*], are also transformed."⁸ Baldi was even more explicit. In his own text he declared "that soul and body are so joined and connected that they act as one, wherefore the passions of the soul are joined to the corporeal passions and correspond to a unique individual [*singulae singulis*] from which the affections are composed. Of whatever kind are the passions of the soul, of such a kind belong to the accidents of the body."⁹ In a text concerning the prediction of human inclinations on the basis of temperament, Baldi described the *theoretica* that taught how "to dig up signs and precepts." One needed first to discover the "complexion" of an individual body. "From signs which sense will supply us we learn of what sort is the mass of blood which is found in the veins; this nature known, the spirits of the blood become further known to us; and when we know of what sort the spirits are, then the propensities brought together from soul and body are made manifest to us."¹⁰ Knowing of what sort were the spirits in the blood, one knew also the dispositions related to fantasies and thoughts. Thus, spirits induced thoughts, appetites, and inclinations. These were followed by acts that formed habits and character.¹¹ Years later, the Jesuit mathematician and natural philosopher, Gaspar Schott (1608-1666), placed Baldi in the company of Hippocrates, Aristotle, Galen and della Porta as one of the most important authorities in *physiognomia*.¹² Schott did not mention what was even a greater claim to fame, a book Baldi had written, one of the first of its kind, discussing how a person's handwriting disclosed signs of spiritual links between body and soul.¹³

To some, Baldi announced, it might seem silly to claim that by reading a letter one could know the dispositions, habits, and thoughts of its writer. Yet, he explained, every practice arose from and depended upon some internal form, and every form operated upon a specified subject [*determinata materia*]. Words resulted from forms of the mind, and the

choice of words (when not governed by reason) indicated the qualities and temperaments of the person delivering them. When writing, one made images of words, and these too, the very style of written letters, were signs potentially indicating habits of the mind. Expressions in writing thus bore the imprint of “qualities, habits, and dispositions of the soul.”¹⁴ The motion of the hand, “being the obedient instrument of the soul,” made visible a natural inclination, if, Baldi was careful to add, the manner and discipline of one’s life did not amend and change it.¹⁵ As was a frequent observation in discussions of physiognomy, Baldi held that a particular temperament produced particular inclinations. The choice of words and style of writing were similar to marks on the body – outward signs of an inner proportion of qualities that resulted in specific temperamental effects.

As Ian Maclean has recently observed,¹⁶ the business of signs captured the imagination of Renaissance logicians, mathematicians, philosophers and physicians. Following upon the ancient texts of Aristotle and Galen, writers like da Monte, Argenterio, Cardano, Chiaramonte, and Capivaccius argued about whether signs existed solely in the intellect or were part of the order to nature, whether they gave indications of certainty or were only probable clues, whether they were permanent or subject to change, and especially about how many signs were necessary to justify an inference.¹⁷ Physicians brought the study of signs into the service of prognosis. However, the most highly developed study of signs, in which judgments about their dominant meanings became standard practice, took place within the very discussion in which Baldi commented most extensively, physiognomy.¹⁸

Connecting outward signs to inward propensities required considerable skills of observation, moral analysis, and interpretation. Nevertheless, Baldi believed that just such a hermeneutic approach was of the utmost utility in caring for, and coping with, both individual and civic bodies. Corporate entities possessed temperaments as well, and in applying the interpretation of signs to his native city of Bologna, Baldi crossed the threshold of yet another area of inquiry – urban physiognomy. “We are able to know human complexions by means of reason, and this has utility for future knowledge, for the physician, the natural philosopher, as well as for civil society . . .”¹⁹ Just as human actions reflected the character of the man who devised them, a city, Baldi argued, was itself a collective human action that, like an individual, possessed both a body and a soul. In a city, the bishop and the clergy represented the speculative part of the civic soul while the nobility, including the city’s legates and magistrates, became the spiritual link between the soul and the city’s corporeal actions. Civic

actions that reflected a virtuous civic spirit displayed themselves in outward signs of religion, science, the intellect, and especially, Baldi notes, in the understanding of real things and the knowledge of how best to use them.²⁰

At the time that Baldi was writing, Bologna's real soul was in Rome, and had become detached from its active body. The city fell under papal jurisdiction and was administered by a papal legate, Cardinal Giustiniani. Writing to Giustiniani, Baldi provided a report about the city and its people, *Relazione dello Stato e Governo di Bologna*, blending physiognomy with Hippocrates, and noting that "anyone who wants to govern people well must know the nature of their customs."²¹

There was a direct link, Baldi told the Cardinal, between the earth, water, and food of the region and the character of the Bolognese. The soil in one place, he noted, was full of stones, but richer in another. In one part of the city even the fruits and vegetables had a different taste, and such things affected the citizens in their thinking and in the way they perceived the world around them. In one part of the city, where grain was scarce, the residents ate chestnuts and drank milk from sheep. They were, as a result, inclined to be ferocious and were usually thieves. There were other signs of moral decay as well. Although combative in ancient days, some now preferred comfort and quiet living. Others had become wasteful by nature and prone to melancholy. Some sought only to serve women and had become lazy and careless.²² The nobility, which along with the clergy ought to have nourished the city's spiritual identity, had become impotent. Baldi (whose family, although noble, never quite acquired senatorial status) complained bitterly of its excesses and arrogance. One group, the city's physicians, which Baldi viewed "not less than nobles," had, he thought, particularly fallen from a state of civic grace. Their professional status had suffered since in many minds Bologna was no longer the mother of their studies. Something had happened to the physicians of the city. "Today," Baldi remarked, "doctors do not work for the public good if they are not paid." Many no longer spoke their minds, had become timid or angry, or were so fixed in their own opinions, were so arrogant, imprudent, cruel, and careless, that they were easily mistrusted.²³ Among the signs of inner virtue in the civic body, science and the intellect had suffered. The College of Medicine had been imposed upon by the city's Senate, and Baldi complained that the College was often not even consulted when appointments were made.²⁴ Most important, however, it was what Baldi considered a primary sign of civic merit, the practical knowledge of real things and knowing how to use them (*cognizione delle proprie cose, per saperle ben usare*), that had been ignored. "He who attends to

speculations,” he complained, “finds little worth in actions.”²⁵ Many doctors in Bologna had remained speculative Galenists whose view of medicine was grounded in ancient theory. They did not work with their hands the way other kinds of physicians did. To reestablish the habits indicative of civic virtue and to restore the moral authority of the Bolognese medical faculty Baldi turned to alchemy.

For Baldi, alchemy held an important place in the world of signs, complexions, and hidden natures, and he openly proclaimed more than a rudimentary knowledge of the subject. At the beginning of a manuscript text titled “*Alchemia e la sua medicina*” (Alchemy and its medicine) he declared his intention to “demonstrate that alchemy is in nature” and “that medicine itself, and everything that cures the body from illness or imperfection, is in alchemy.” Some, he knew, would want to separate the subject from philosophy, but those who understood it recognized that, along with chemical practices like separation and extraction, alchemy had a speculative or theoretical part and thus could be considered part of occult philosophy (*filosofia occulta*) or medicine (*fisica*). In this way it distinguished itself as a noble science.²⁶

Alchemy, he claimed, was an art based upon rational principles and replicable methods. References to successes in transmutation and to the creation of perfect medicines could be found among serious writers in all times, nations, and languages. Some, like Arnold of Villanova, proclaimed even to have seen with their own eyes that an alchemical medicine could cure imperfect bodies. The Emperor Charles V had also witnessed the perfection of imperfect bodies by means of the art of Paracelsus. It was, however, to another source of alchemical transmutation that Baldi gave particular mention and which gives us a clue as to when his own alchemical text may have been written. A certain noble person in Rome, he declared, had witnessed an alchemical medicine convert quicksilver into silver. The reference came from a book that Baldi identified as the “*Trattato di Auro*” of Pico, certainly the *De aruro libri tres* of Giovanni Francesco Pico della Mirandola (ca. 1469-1533).²⁷

Pico’s treatise, if indeed Pico was the actual author,²⁸ first appeared at Venice in 1586, edited by Caesar Caprilius.²⁹ A second edition appeared at Ferrara a year later, followed by a third printing the year after that. Since Baldi refers to the text in his own writing (“*Alchimia e la sua medicina*”) it is possible that his comments about alchemy stem from after the first publication of the Pico text in 1586 and are not the expressions of an impressionable student of the early 1570s, as one bibliographic reference suggests. Baldi’s manuscript, then, may have been the work of a well established professor at the University of Bologna. Regardless of

when the manuscript appeared, Pico's text was central to the cultural claims Baldi wished convey in writing it.

Pico, or Pseudo-Pico, had referred to ancient and medieval writings in support of the notion that the art of transmutation was within human reach and was a subordinate part of natural philosophy. There were, Pico declared, several ways to produce gold alchemically. Gold could be extracted from other metals by means of separation (in the same way that copper was separated from silver). One could also acquire it by means of working with metallic mixtures, or by extracting the seeds of gold from gold itself. The best and most productive method, however, was to reduce more complex compositions to their prime matter and mix the terrestrial elements with a perfect fifth essence. In none of these procedures, however, was it necessary to follow the secret principles of a more subtle philosophy. In fact, Pico was sure that contemporary artisans far surpassed ancient practitioners in their procedures, materials, and chemical knowledge. By operating upon new materials in new ways, alchemists had, he claimed, day by day come ever closer to imitating the perfection of nature and to revealing the divine powers that had been conferred by the Creator upon his creation.³⁰

The methods of ancient artisans and the materials they used, Pico declared, were of little help to the artisans of his own time inasmuch as the metals mined in Italy were often far different from the materials mentioned, and apparently used, by ancient authors. When speaking of cinnabar, for instance, Pico warned his readers to remember that the Arab *Bulcasis* thought of it as a composition made from quicksilver and sulfur, which was, of course, very different from real cinnabar, "as much," he declared, "as the lion is different from the monkey."³¹ Neither was it a substance that some said was made in India, resulting somehow from scuffles between dragons and elephants. Real cinnabar was extracted from the earth and, in ancient days, such a material had been imported from Africa. At the time of Augustus it was considered rare as both *Dioscorides* and *Vitruvius* had attested, the former in his discussions concerning making practical medicines, the latter when referring to the decoration of buildings in his work on architecture.³² Other metals and minerals had also long been transported into Italy from far away. But some were now found close to home, and many of these had not been known in the past. Cinnabar was now mined in Italy, and almost everyday, Pico proclaimed, Italian artisans produced a variety of heretofore unknown effects by preparing mixtures made from different metals coming from the mines of Italy. Nature proclaimed the specific properties and hidden powers of these substances by means of their accidents, or signs.³³ Artisans,

especially, knew how to recognize them. More important, artisans, by means of industry and artifice, knew how to perfect and make use of those properties that were revealed by accidents, thus combining realms of what Gaspar Schott called natural and artificial magic.³⁴

Fables and ancient definitions aside, Pico's comments are important for the attention they give to the specific traits and characteristics of local surroundings. Like Hippocrates's *Airs, Waters, and Places*, Pico's text connected local environments to specific effects – in this case, to the effects of local materials in alchemical processes. Baldi would have been greatly interested in that relationship, especially as the influence of local conditions upon specific temperaments³⁵ might be revealed by means of signs or accidents. The ancients had failed to read those signs correctly. Many things, Pico observed, had remained unknown to the ancients who remained unaware of the primary and secondary qualities of local substances. The Greeks, however, had known about the reciprocal forces of attraction and repulsion within certain materials, but they were, he declared, limited in their knowledge of the range and location of the materials possessing hidden powers.³⁶ Like Pico, Baldi, in his own way, sought the origin of specific effects (revealed through signs on the body, habits of writing, and styles of civic life) in underlying forms and spirits affected by local environments.³⁷ Others did the same, and the leader in this arena was certainly Paracelsus whose *ars signata* also depended upon a relationship between external “signatures” and the powers enclosed within natural objects rooted to specific localities. In the private domain of Camillo Baldi alchemy, indigenous experience, and Paracelsian medicine blended together in a world of signs.

“Without any doubt,” Baldi wrote, “we can call alchemy an art or science as it demonstrates to the human intellect things within the order of nature . . . *so that it truly makes the forms hidden within nature appear.*” [my italics] The forms and essences hidden in each individual thing could be detected through their signs and effects, but were not possessed for practical purposes except “by means of the operation of the hands and the eyes, things not permitted in any other art or science.” Without the art of alchemy, Baldi declared, “one cannot penetrate into the recesses and secrets of nature.” With it, however, the practitioner could also be in advance of nature so as to pass beyond nature creating marvels by means of the industry of the hand. Art, by means of industry, could move and even transform nature.³⁸ “In unveiling the intellect,” Baldi observed, “very often one finds in the deep interior of animals, plants, and minerals more of the substance of nature than is manifested at the surface. Such discoveries cannot come about without this art, breaking up, melting, and

separating the elementary parts of things.” For this reason Baldi maintained that alchemy was an art that held the real key to knowledge. He called it the bridge between philosophy and medicine.³⁹

A chief aim of alchemy was the preparation of a universal and perfect medicament which, being total activity and simplicity, and reduced almost to form itself, was able to animate and purify matter. Baldi noted that this was sometimes called the Philosophers’ Stone, but other medicaments, not yet as perfect, although nevertheless able to affect particular illnesses, were also useful and able to be prepared alchemically. Alchemy, then, was the art which discovered the nature and substance of composite, or mixed, things. Since, in the inferior world, nothing was without mixture, the art of alchemy encompassed more than all the other arts and sciences put together. It was a shame, he complained, that the doctors of Bologna knew almost nothing about it, especially since alchemy revealed what was truly powerful in the world. Alchemy was concerned with forms, and the forms of bodies arose from the ethereal, pure, invariable heavens. Heavenly form *informed* material objects, becoming the life, substance and being of the body. The exercise of the alchemical art involved recognizing and separating ethereal forms from bodies, and from this most precious and noble internal thing, making useful medicines.⁴⁰

Baldi, like many others, held that the alchemical art had ancient beginnings as disclosed in the *Emerald Table* of Hermes, and had been expanded upon by the industry of Isaac Hollandus, Geber, Rupescissa, Arnold of Villanova, Raymond Lull and others. Much was learned through Theophrastus Paracelsus and his disciples who, Baldi observed, had so amplified the art in less than fifty years that some had begun to venerate their art as the most advanced natural science. The disciples of Paracelsus were true artisans who knew how to alter the conditions of bodies. They understood the processes of distillation, sublimation, calcination, putrefaction, digestion, and coagulation. For them, experience was a better teacher than any book. Becoming chemical physicians they had learned how to read the signatures of nature, how to separate the pure, spiritual parts from individual things, and how to produce either particular or universal medicines. Most of all, however, such physicians allowed one to “see and touch with the hand the transmutation of metallic and human bodies. It is as if one were able to touch with the hand the immortality of the soul [anima], the resurrection of the body and its glorification.”⁴¹

Baldi concluded that what he called chemical, or new, medicine was not outside the design of reason and had more advantages than the *medicina vecchia*, the old medicine which was taught in schools. The old medicine, he thought, contained little that was durable and offered little

help in severe illnesses like epilepsy, hydropsy, paralysis, gout, or fevers. After all, he reasoned following Hippocrates and Paracelsus, illnesses and the medicines that would treat them changed over time and corresponded to the specific conditions of local or regional place.⁴² The *medicina vecchia* also had no understanding of the “diversity of principles” in nature and had consequently “left so much fog and obscurity that even the most sincere eyes can hardly see the truth.” No one wished to deny that Galen and the Arabs had discovered things of great value, but Galen and his followers did not encompass within themselves knowledge of all things. More important, the method of gaining knowledge had not ended with them. Indeed, Baldi proclaimed, “it will never end, except with the end of the world.”⁴³

In contrast to the old school, the chemical school held that the foundation of the body was to be found in seeds, or in a divine balsam. The professors of the new school also gave chemical principles greater attention, so much so that many now believed that they were able to demonstrate the forms and principles of bodies chemically. In discovering and making use of such forms the physicians of the new school were able to touch the divine mind, not through intellectual and rational syllogisms, but by means of sensate experience. The divine agency in nature was discovered by the hands of the chymist, who, with his art, dissolved and separated every composite thing into its own principles, “and in this way,” Baldi writes, “arrives at the internal and complete [knowledge] of each individual [thing] and sees with his own eyes and touches with his own hand that which, in each of its parts, accounts for the power and faculty of this or that effect.”⁴⁴

Often, Baldi contended, a person who was ignorant of letters and syllogisms, but who was well practiced in handling bottles and fires, reasoned even better than all the all-knowing doctors of the old school.⁴⁵ Through processes of separation chymists had found the subtle principles of bodies and were able to show that each terrestrial thing ultimately resolved itself into them. The principles of Salt, Sulfur, and Mercury were not just names, Baldi proclaimed, but entities that were real, clear, distinct, visible and palpable. The chymists, he declared, also philosophized in a more analytic or conclusive way, and with more certainty, than anyone from the old school, limited by the four humors and imaginary elements, could do.

So, what is going on in the private world of Camillo Baldi? Within the terrain of possibilities traversed by a mildly disheartened, civically minded natural philosopher at the University of Bologna, what points of reference helped to orient expressions of alchemical thinking? In his studies of

physiognomy, graphology, and alchemy Baldi sought out relations between external accidents, or signs, and the internal qualities or powers of individual and even corporate bodies. At times he insisted upon discovering syndromes of signs as the best way to gain certainty of their true indications.⁴⁶ In this regard, a major reference was to be found in the writings of Paracelsus. Paracelsian signatures and correspondences, in fact the whole *ars signata* of Paracelsus, added a new dimension to received semiologies of nature and medicine. Paracelsus insisted that the signs of nature were not at all ambiguous, but essentially connected to the internal virtues and powers of bodies. Led by a body's symptoms, or, as Paracelsus called them, the "fruits" of illness, chemical physicians extracted hidden powers from those parts of nature whose physical appearance functioned as outward indications of inner virtues, and as clues to what specific parts of the human body those virtues could affect. Applying extracted powers especially from local plants, animals, and minerals as a means to revive the spiritual life of corrupted virtues in the body and to restore the body's health has been likened by the Paracelsus scholar and medical historian Walter Pagel to a kind of medical redemption.⁴⁷ Moral and natural philosophy intersected within the network of signs and virtues

Pico's text, *De Auro*, also drew attention to the hidden properties of local materials that were best recognized and made useful for alchemical purposes by the industry of local artisans. When Baldi read this text he not only encountered testimonies to the production of precious metals, but found there too Giovanni Francesco's eye witness account of how the *form* of one metal had been entirely removed from it and replaced, through a method unknown in antiquity, by the *form* of gold.⁴⁸ In a similar fashion, chemical physicians, skilled in recognizing signs and working with the hands, extracted not *forms* but virtues from various parts of nature, especially metals and minerals, and inserted them into the body so as to replace or restore what the body lacked. In this case, the signs of disease indicated, not the disposition of qualities and humors, but revealed which virtues were specifically needed to bring about an inner, spiritual change. Whether the subject was character, *astra*, or Aristotelian *form*, and no matter if related to moral philosophy, medicine, or alchemy, Baldi's focus in regard to individual or civic domains was upon recognizing inward states by means of understanding their connections to outward signs. An intellectual habit relevant within several domains and based in Aristotelian and post-Aristotelian sign theory ordered the private world of Camillo Baldi and made alchemy, along with medicine, logic, physiognomy, and graphology, a relevant agent leading to an unambiguous knowledge of

secrets, characters, and hidden powers. With that knowledge those skilled with the hands might produce wonders, easing the distress of the individual body and relieving the dis-ease of the social order.

Notes

¹ In this essay I am much indebted to David John Membrey who graciously shared with me his excellent study, David John Membrey, *The life and works of Camillo Baldi (1551-1637)*, (PhD diss., London, Warburg Institute, 1985).

² Giovanni Nicolo Pasquali Aldosi, *I Dottori bolognesi di teologia, filosofia, medicina, e d'arti liberali dall'anno 1000 per tutto Marzo del 1623* (Bologna: Tebaldini, 1623), 160. David John Membrey, *The life and works of Camillo Baldi (1551-1637)*, 4-5.

³ Remaining references from Bologna indicate the following cycle: *Libros meteorum* (1579), *De anima* (1580), *Parva naturalia* (1581), *De physico auditu* (1582), *De coelo et mundo* (1583), *De generatione et corruptione* (1584), *De meteora* (1585). From the introduction by Jules Depoin in *Traité des indices tirés des lettres missives ou l'Art de connaître à l'examen d'une lettre missive les mœurs et les habitudes du scripteur*. . . (Paris: Société de graphologie, 1900). M. Tronti, "Baldi," in *Dizionario Biografico degli Italiani*, ed. Alberto M. Ghisalberti (Roma: Istituto della enciclopedia Italiana, 1960-), vol. 5, 465-7.

⁴ Martha Teach Gnudi, Jerome Pierce Webster, and Arturo Castiglioni, *The life and times of Gaspare Tagliacozzi surgeon of Bologna 1545-1599* (New York: Herbert Reichner, 1950), 224.

⁵ Membrey, 6-10. Luigi Simeoni, *Storia della Università di Bologna*, vol II: "L'eta moderna" (Bologna: Nicola Zanichelli, 1944-47), 93-94.

⁶ Giovanni Semprini, "Bologna nel seicento", *Il vomune di Bologna: rivista mensile municipale* 18 (1931): 31-44.

⁷ *Quattro opposizioni al "discorso fatto sopra il moto dell'acque" dal Galileo de Galilei*. Membrey, 25-26.

⁸ Iohannis B. Porta, *De humana physiognomonia Ioannis Baptistae Portae Neapolitani Liber IIII*. . . (Hanoviae: apud Guilielmum Antonium, impensis Petri Fischeri Fr., 1593), 3. The source for much of the writing on physiognomy in the Renaissance was the Pseudo-Aristotelian text *Physiognomonica*, which begins with the premise that the "body and soul of the same creature are always such that a given disposition must necessarily follow a given form. . . If this is true (and it is invariably so) there should be a science of physiognomics." *Aristotle: minor works*, trans. Walter Stanley Hett (Cambridge Mass.: Harvard University Press, 1963), 85. On ancient traditions of physiognomy see Elizabeth C. Evans, *Physiognomics in the ancient world* (Philadelphia: The American Philosophical Society, 1969).

⁹ Camilo Baldi, *In physiognomica Aristotelis commentarii a Camillo Baldi*. . . (Bononiae: Typis Sebastiani Bonomij, 1621), praefatio.

¹⁰ Camilo Baldi, *De humanarum propensionum ex temperamento praenotionibus*. . . (Bononiae: typis H.H. Euangelistae de Duccijs, 1664), 2.

¹¹ Camilo Baldi, *In physiognomica Aristotelis commentarii a Camillo Baldi*. . . , praefatio. The English writer Thomas Hill, basing his comments on the work of the Bolognese Bartolommeo Cocles (1467-1504) noted in 1613 that for all living creatures “it is a matter common as to suffer and do of a natural inclination: which as the same in beasts is named a violence, even so in men this is . . . named an inclination . . . All of which inclinations are reported to be the utterers both of the naturall motions and conditions in men, which by reason and wisdom will be well goverened. Which well appeared by Hippocrates, who by his face was judged wicked, yet through philosophy knowne to be well conditioned.” Thomas Hill, *A pleasant history: declaring the whole art of physiognomy*. . . (London: W. Iaggard, 1613), 1r-1v.

¹² Gaspar Schott, *Magia universalis naturae et artis*. . . (Herbipoli: excudebat Henricus Pigrin Typographus Herbipolensis, 1657), vol. 4, 597.

¹³ Camilo Baldi, *Trattato come da una lettera missive si conoscono la natura, e qualita dello scrittore* (Carpi: Girolamo Vaschieri, 1622). Republished later as part of *De humanarum propensionum ex temperamento praenotionibus*. . . (Bononiae: typis H.H. Euangelistae de Duccijs, 1664). Translated into French by Jules Depoin, *Traité des indices tires des lettres missives ou l’Art de connaître à l’examen d’une lettre missive les moeurs et les habitudes du scripteur*. . . (Paris: Societe de Graphologie, 1900). A English commentary and partial translation was prepared in 1950 by Robert E. Backman, copies of which have been available through the Handwriting Analysis Research Library, Greenfield MA. A good discussion of Renaissance graphology and the influences upon Baldi’s text is Membrey, 51-70.

¹⁴ Camilo Baldi, *Trattato come da una lettera missive si conoscono la natura, e qualita dello scrittore*, 3-4.

¹⁵ *Ibid.*, 19.

¹⁶ Ian Maclean, *Logic, signs and nature in the renaissance: the case of learned medicine* (Cambridge: Cambridge University Press, 2001), chapters 5 and 8.

¹⁷ *Ibid.*, 181-188.

¹⁸ *Ibid.*, 315-319.

¹⁹ Camilo Baldi, *De humanarum propensionum ex temperamento praenotionibus*, 1.

²⁰ Camilo Baldi, *Congressi civili di Commillo Baldi, ritrovati dal Marchese Mattia Maria de Bartolommei e dall’istesso, con alcuna moderazione, e accrescimento*. . . (Firenze: nella stamperia di Vincenzio Vangelisti, 1681), 2-3. This is an altered edition of *Congressi civili*. . . *ne quali con precetti morali e politici si mostra il modo facile d’acquistare, e conseruare gli amici*. . . (Bologna: N. Tebaldini, 1637).

²¹ Semprini, 32. Cf. Mario Fanti, “Le classi sociali e il governo di Bologna all’inizio del secolo XVII in un’opera inedita di Camillo Baldi,” *Strenna storica bolognese*, 11 (1961): 133-79.

²² Semprini, 33-34.

²³ *Ibid.*, 37-38.

²⁴ See Gianna Pomata, *Contracting a cure: patients, healers, and the law in early modern Bologna* (Baltimore: Johns Hopkins University Press, 1998), 10. Also, Gnudi, Webster, and Castiglioni, p. 145.

²⁵ Semprini, 38.

²⁶ “Alchimia e la sua medicina,” *Bibliotheca Dell’Archiginnasio*, Bologna, MSS. No. B. 1397; fol. 123r. The manuscript is part of small group of writings seemingly dedicated to “Giovanni Angelelli, Caualiere e Senatore Bolognese.”

²⁷ *Ibid.*, fol. 123v-124r.

²⁸ Lynn Thorndike, *A history of magic and experimental science* (New York: Columbia University Press, 1941), vol. 5, 540.

²⁹ Caprilius notes in his introduction that he had received the manuscript after Pico’s death from Pico’s daughter, Julia. If the story is to be believed, hardly anyone besides Julia and her husband, Sigismund Malatesta, knew about the work before Caprilius got a hold of it. Indeed the text does not appear in any of the collected works of Giovanni Francesco and his more famous uncle that I have been able to consult. I have checked against *Opera* (Bologna: Benedetto de’Ettore Faelli, 1495-96); *Opera* (Venetiis: Bernardinus Venetus de Vitalibus, 1498); *Ioannis Pici Mirandulae omnia opera* (Venetiis: per Guliumum de Fontaneto de Monteferrato, 1519); and *Opera omnia Ioannis Pici Mirandolae concordiaequae comitis theologorum et philosophorum*. . . (Basileae: ex officina Henricpetrina, 1572-73).

³⁰ *Io. Francesci Mirand. . . de auro libri tres*. . . (Ferrariae: excudebat Victorius Baldinus, 1587), 65-76; 78-92.

³¹ *Ibid.*, 79.

³² *Ibid.*, 80.

³³ *Ibid.*, 79.

³⁴ Gaspar Schott, *Magia universalis naturae et artis* (Wurzburg, 1657), vol 1, 19-24.

³⁵ *Ibid.*, vol. 4, 595-596. Schott counts among the principles of physiognomy the influence of local settings including the mores and proclivities bestowed by parents, the qualities contained in the milk of specific wet nurses, as well as the influences upon temperament of specific regional climates.

³⁶ *De auro libri tres*, 90-92.

³⁷ Most recently, Alix Cooper has drawn attention to the variety of forms of local knowledge in the early modern era. See Alix Cooper, *Inventing the indigenous: local knowledge and natural history in early modern Europe* (Cambridge: Cambridge University Press, 2007).

³⁸ On the history of nature as a developmental history fashioned by industry and culture see Anthony Grafton, “Renaissance histories of art and nature,” in Bernadette Bensaude-Vincent and William R. Newman eds., *The artificial and the natural: an evolving polarity* (Cambridge Mass.: The MIT Press, 2007), 185-210.

³⁹ “Alchimia e la sua medicina,” *Bibliotheca Dell’Archiginnasio*, Bologna, MSS. No. B. 1397; fol. 124r

⁴⁰ *Ibid.*, 124v-125v.

⁴¹ *Ibid.*, 126v-127v.

⁴² *Ibid.*, 129r.

⁴³ *Ibid.*, 129v-131v.

⁴⁴ *Ibid.*, 134r-134v.

⁴⁵ *Ibid.*, 135r.

⁴⁶ Maclean, 317-8.

⁴⁷ Walter Pagel, *Paracelsus: an introduction to philosophical medicine in the era of the renaissance* (Basel and New York: S. Karger, 1958), 126ff.

⁴⁸ *De auro libri tres*. . . (1587), 104-5; 92. "I have also seen removed entirely the form that one metal had and at the same time and by means of an ingenious method of the art the insertion of another form into it, namely that of gold."

THE WORLD-SPIRIT AND QUINTESSENCE IN THE CHYMICAL PHILOSOPHY OF JOSEPH DU CHESNE

HIRO HIRAI*

RADBOUD UNIVERSITY NIJMEGEN, THE NETHERLANDS

1. Introduction

Renewed interests in the work of Paracelsus (ca. 1493-1541) began some twenty years after his death, giving rise to the so-called “Paracelsian revival” movement.¹ Early followers of the Swiss physician contributed much to its development by collecting, editing and translating his manuscripts. Then original writings defending the whole of Paracelsus’s philosophy began to appear around 1570. The most important work among these was certainly the masterpiece of the Danish physician Petrus Severinus (1540/42-1602), *The Idea of Philosophical Medicine (Idea medicinae philosophicae)* (Basel, 1571).² The impact of this work was such that Severinus was severely attacked by the head of the anti-Paracelsians Thomas Erastus (1524-83) of Heidelberg, in his *Disputations on Philipp Paracelsus’s New Medicine (Disputationes de medicina nova Philippi Paracelsi)* (Basel, 1572).³ The debates on this new medicine, which was supported by a host of chymical philosophers, soon bore a European character and lasted at least until the first decades of the seventeenth century. In the middle of the controversy a bitter conflict emerged in France between the traditional Galenists of the Paris faculty of medicine and the Protestant physicians at the court of King Henry IV. One of the royal physicians, Joseph Du Chesne (1546-1609), also known under his Latinized name Quercetanus, played the role of advocate for the community of chymical philosophers.⁴ But his Paracelsianism was moderate, far from the militancy of his early German fellows. His primary concern was the defense of chymical art and its medical application. His

attitude towards the Swiss physician can best be summed up in his own words:

“But as far as Paracelsus is concerned, I never proposed to take up the defense of his theology nor considered supporting him in all issues as if I had adopted his words under oath. But in addition to the witness with which Erasmus showed respect to him in some letters, I would dare say and maintain that in medicine he taught almost divinely many things that the thankful posterity can neither admire nor commend sufficiently [...]”⁵

Born as a physician's son in Gascogne, the young Huguenot likely studied surgery in Montpellier before working as a military surgeon. In 1574 he settled in Geneva and began to frequent the Paracelsian milieu, especially the circle of Theodore Zwinger (1533-88), the renowned professor of medicine at the University of Basel.⁶ Du Chesne became an ordinary physician as well as a diplomatic agent to King Henry IV around 1591. Upon publication of the treatise *On the Matter of the True Medicine of the Ancient Philosophers* (*De priscorum philosophorum verae medicinae materia*) in 1603,⁷ he was attacked with an anonymous work *Apology for the Medicine of Hippocrates and Galen against the treatise of Quercetanus* (*Apologia pro Hippocratis et Galeni medicina adversus Quercetanni librum*) (Paris, 1603).⁸ The real author of this work was Jean Riolan the elder (1539-1606), the dean of the Paris faculty of medicine. Du Chesne soon countered by publishing the treatise entitled *For the True Hermetic Medicine* (*Ad veritatem hermeticae medicinae*) (Paris, 1604), which explains the foundations of his natural philosophy, not as yet revealed extensively. This work was widely read in Europe and its influence on his contemporaries was considerable. Although deserving of careful study in its doctrinal dimension, it has not been explored sufficiently by historians.⁹ The aim of the present study is to analyze Du Chesne's matter theory expounded in the *Ad veritatem hermeticae medicinae* and to place it in the historical and intellectual context of Paracelsian chymical philosophy.

2. The *Ad veritatem hermeticae medicinae* (1604)

Du Chesne's treatise is not a well-organized work due to its polemical nature.¹⁰ Here I shall focus on his discussions related to the basis of his natural and medical philosophy. Let us first consider the place of Hermes since this name appears in the book title itself. According to Du Chesne, Hippocrates and many philosophers who followed him learned the

foundations of sciences from the Egyptians who possessed not only the most advanced astronomy and mathematics but also the universal knowledge of all disciplines including medicine. For Du Chesne the Egyptians had learned their sciences and arts from Hermes Trismegistus. As a result all philosophers and physicians must rely on the teachings of this mythical figure. Indeed Du Chesne observes the flowering of the “Hermetic” art among his contemporaries. Note that such admiration for the “ancient wisdom” (*prisca sapientia*) with the particular emphasis on Hermes was shared by many of his Platonic forerunners in the Renaissance.¹¹ Du Chesne adds a new perspective, however, in noting that the knowledge of the ancients had been improved over the centuries through the accumulation of new inventions. The best example of this advancement of learning was the internal use of chemically prepared mineral and metallic medicines previously neglected by Galen, the champion of traditional medicine. It is not unreasonable to consider that this kind of positive recognition for the advancement of learning was to be inherited some years later by Francis Bacon (1561-1626), an attentive reader of chymical literature.

After the general history of medicine Du Chesne gives a long list of the “Hermetists” who are related to Zwinger’s medical circle in Basel (*Academia Basiliensi medicinae*) and the wider German community of chymical philosophers. At the top of the list he places Theodore Birckmann who introduced him to Paracelsianism. Du Chesne also avows to have learned from “the great Danish Petrus Severinus the first and very sophisticated foundations of his studies in this field.”¹² Indeed Birckmann and Severinus represent two lights to the eyes of Du Chesne.

3. Nature and the World-Soul

Now let us look at Du Chesne’s explanation of the notion of nature, which provides the basis of his natural philosophy and matter theory. Why is the study of this notion important? Its value is evident for Du Chesne since the knowledge of natural materials that are used in medicine comes from nature itself. Following Plato, he argues that the first principle, by which and from which everything is made, is God. From this principle comes the second which is properly called “nature” (*natura*). Du Chesne asserts that the second principle was diffused into all things by the word of God “Fiat” at the moment of the Creation. He notes that the Christians and the pagans were, however, accustomed to applying the term “nature” to almost everything. Even Aristotle, he adds, divided nature into two categories,

calling the first one “naturing nature” (*natura naturans*) and meant by it God himself:

“Thus the first naturing nature is God while the second, which is properly called “nature,” is divided further into universal and particular. Universal nature is the ordinary power of God, which is diffused through the whole world. In this sense one says that nature receives this or that and nature does this or that as Augustine teaches in the *City of God*, book 2 [...].¹³”

Du Chesne proceeds to explain the subdivision of nature into universal and particular. For him universal nature represents the virtue that God implanted in all creatures. From this virtue each creature receives its own particular signature of divinity in its particular nature. Note that this idea is essential to Du Chesne’s doctrine of “the signature of things” (*signatura rerum*).¹⁴ Thus for him, just as for most Paracelsians, the world is full of signatures which bear witness to the obscure manifestation of divinity. That is why, argues Du Chesne, the ancients said that everything is full of gods.¹⁵ Then he presents another view of universal nature as influences through which celestial bodies act upon the sublunary world. Although he cites Thomas Aquinas as a representative of this interpretation, Du Chesne’s main aim is to demonstrate the harmony of opinions among the eminent ancients regarding universal nature. For this purpose, he introduces the idea of the “World-Soul” (*anima mundi*) under the authority of Plato and Hermes:

“Moreover this is the universal nature about which Plato talks in the *Timaeus* when he says: “Nature is a certain force diffused into everything, a mediator and a nurse of bodies, being by itself the principle of motion and rest within them.” Hermes says in almost the same words that nature is a certain force resulting from the primary cause and diffused into all bodies, being by itself the principle of motion and rest within them. The Pythagoreans said that this force was God. Then Virgil the great follower of the Pythagorean school wrote: “Spirit nourishes from inside.” The Platonists called it “World-Soul”.¹⁶”

Du Chesne notes, however, that the Platonists did not explain concretely how this universal soul governs sublunary things. Calling upon the Hermetists whom he considers more accurate and penetrating, he states that the sublunary world is a great living body, composed of the four traditional elements (fire, air, water and earth). The parts of this world-animal are mutually connected as members of a single animal, such that every part of the world is animated and sustained by this universal soul. If

the animal body draws life from its soul, then the same process is realized more admirably in the greater world-animal which is nobler than simple beasts. The idea of universal animation is not unique to Du Chesne.¹⁷ Indeed the doctrine of the World-Soul is widespread among the Renaissance Platonists. What makes his discussion particular is the fact that the invention of this idea is not explicitly attributed to the Platonists but to the Hermetists, that is, the chymical philosophers. Under their authority Du Chesne even identifies heaven embracing all with the universal soul which cherishes and sustains every perishable natural body. He does not neglect to relate it with the famous theory of the “World-Spirit” (*spiritus mundi*), advanced by the Florentine Platonist Marsilio Ficino (1433-99):

“[The Hermetists] add that from the soul of the world come all the forms of things and the virtues and powers by which all these things are vivified, sustained and subsist. The soul and the body are connected as one [entity] thanks to a spirit that unites both sides since it belongs to the nature of both. Similarly the soul and the body of the world are united together by the mediating and interposing ethereal spirits [...].¹⁸”

After establishing the identification of the World-Spirit with the World-Soul, Du Chesne goes on to introduce a Biblical dimension. For him the authority of Moses is more important:

“But by the World-Soul the Platonists indicated to us rather some spirit that fosters, animates, preserves and sustains everything like a certain trace of that spirit of Elohim, which moved or rested over the [primordial] waters. Being aware of the story of *Genesis*, Plato was able to remember it and build his [doctrine of the] World-Soul from it.¹⁹”

Uniting the Ficinian World-Spirit with the Biblical spirit of God (*spiritus Dei*) of *Genesis*, 1.2, Du Chesne tries to place Plato as “the Attic Moses” in the middle of the pantheon of the ancient sages. Indeed the belief in “the ancient theology” (*prisca theologia*) was re-activated by Ficino and developed in the stream of Renaissance Neoplatonism.²⁰ But Du Chesne goes even further to regard Hermes as an assiduous student of Moses’s writings just as in the case of Plato:

“After this virtue of the life-giving spirit, that great [Hermes] Trismegistus, [who was] the most versed and trained in Moses’s sacred writings above all the other philosophers, presented these divine statements in the second book which is entitled *Asclepius*: “Everything is, he says, made and

governed by the spirit in the sphere of the spirit. The spirit fulfils everything. The world nourishes bodies, the spirit animates them. Everything in the world is directed and stirred by the spirit.” He adds later: “[...] everything needs this spirit as we have often said above. Indeed it sustains everything, vivifying and nourishing according to the dignity of each. Life and the very fertile spirit are produced from the sacred fountain.” From these divine words it is clear that this ethereal and life-giving spirit is diffused everywhere and is inserted into everything. So it would not be absurd to deduce and derive the actions, forces and powers of all natural things from the spirits as their causes.²¹

This argument manifestly allows Du Chesne to focus on the role of the “spirits” (*spiritus*). These spirits are supposed to be enclosed in the kernel of natural things and be responsible for chymical reactions observed in laboratory operations. Furthermore, they are considered to hold the secret of life and health.²² As will be shown below Du Chesne advances the idea of the quintessence as the carrier of these spirits. But before considering the nature and role of this special entity it is necessary to learn the basis of his matter theory more closely.

4. Seeds, Principles, Elements and Quintessence

Now let us turn to Du Chesne’s discussions on the “principles” (*principia*), which he calls “hypostatical” (*hypostatica*), and the “elements” (*elementa*) of natural things.²³ He first tries to show a concordance among the ideas of the ancient Greeks, especially Plato and Aristotle, regarding the existence of three principles. He identifies these principles with the Paracelsian triad (Salt, Sulfur and Mercury). Then he explains the constitution of the physical world by dividing it into two globes (superior and inferior). The former is composed of fire and air, the latter of water and earth. These four bodies are not understood as the material causes as in the case of the Scholastic philosophers but are regarded as the cosmological matrices and receptacles of natural things. Indeed this development closely follows the idea of Paracelsus, which was then systematically explained by Severinus.²⁴

Next Du Chesne divides natural bodies into two kinds: simple and composite. The simple bodies are further split into two groups: material and formal. The formal bodies are all active, invisible and spiritual entities. Du Chesne puts them into three categories: the elements, the three principles and the astral “seeds” (*semina*). But their ontological status is not identical since the seeds and the principles reside inside the elements.

There is also a clear hierarchy among them. The first rank is given to the astral seeds which in their turn cause the activity of the three principles. It is because of these seeds and principles that the elements, too, are seen as formal and active entities although they are by nature nearly inert with only passive qualities attributed to them. What is significant is the following point: all these formal bodies can still be considered “material” upon receiving their own material cover or vestments. Through this cover they become perceptible, even visible. Thus for Du Chesne every natural being has a double nature: one visible and material, the other invisible and spiritual. This same idea stems from the teachings of Paracelsus, which Du Chesne learned from Severinus’s neatly systematized version.

Du Chesne clearly denies the possibility of capturing the astral seeds separately by the dissolution of natural things in laboratory operations. Nonetheless he thinks it reasonably possible to obtain the hidden body of the three principles, which can be regarded as their receptacle.²⁵ This is the “quintessence” (*quinta essentia*):

“The artist not only can separate these elemental bodies but also can reduce them into nothing so that, once the passive and material elements separated, those three hypostatical, formal and active principles remain. Contracted into one [entity], these [principles] form a mixed body which philosophers call “quintessence” or “quartessence.” This [essence] is free of any corruption and rich in perfection and life-giving spirits. By contrast the elements alone, separated from the three principles, give only impurities, corruptions and mortification.”²⁶

To my knowledge, the idea of the “quartessence” (*quarta essentia*) or the fourth essence, instead of the traditional alchemical idea of the quintessence or the fifth essence is unique to Du Chesne. The visualization of the three principles is thus realized by obtaining this singular substance through laboratory distillation. Du Chesne makes this modification because he believes that the number of four, given to both the elements and their qualities by Aristotle, is superfluous. Again Du Chesne justifies his idea by the authority of Moses:

“Since Moses did not make any mention of fire in the book of *Genesis*, 1.1, where he teaches the Creation of all things, we confirm the opinion of the divine prophet more willingly than the reasoning of the pagan philosopher [Aristotle]. We do not recognize any other fire than heaven and the aether, thus called because it burns and is ardent as we have already shown. Therefore heaven must be called “the fourth formal and essential element” or rather “the fourth essence,” extracted from the other elements. In fact

the Hermetists reject the fifth being or the quintessence since there are not four elements from which the quintessence is drawn, but only three from which the fourth essence is extracted [...].²⁷

In Du Chesne as in Paracelsus and Severinus fire loses the status of element and is replaced by “heaven” (*caelum*) or “firmament” (*firmamentum*).²⁸ But at the same time heaven takes on a fiery character. What is more significant is the next point: Du Chesne regards the quartessence as a “composite” or “mixed” entity, resulting from the three other elements (air, water and earth) as a fourth body, although it is paradoxically said to be the “simplest” being of all. For him this purest and simplest essence constitutes the body of heaven, which is simple, subtle and endowed with powers to generate, foster, grow and perfect all sublunary things.²⁹ By its supreme subtlety and purity, this heavenly body permeates all natural beings and bestows on them their own specific form and virtues. In such manner heaven fashions all inferior beings. It is this heaven which sends the invisible seeds of natural things into the bowel of the earth. That is why they are called “the astral seeds.”³⁰ Du Chesne explains this relationship with celestial bodies, stating that God gave to heaven the astral seeds which the celestial bodies in their turn spread into the bosom of the three inferior elements (air, water and earth), nourishing them and informing them.

5. The Quest for the Universal Medicine

Upon materializing the heavenly essence which holds the secret of sublunary life, the quest for the universal medicine seems like a real possibility to Du Chesne. For him the true medical philosopher must eliminate the material cover of the three principles by distillation to obtain this essence crucial to the preservation of health and life. Du Chesne even goes on to identify it with “the celestial stone of philosophers” (*lapis caelestis philosophorum*), an idea against which Riolan the elder reacted violently. Responding to the ignorance of his detractor, Du Chesne explains:

“As it is very simple, pure and incorruptible, [the universal medicine] is called “quintessence” (although we prefer to call it “quartessence”) and “the celestial stone of philosophers.” Since that anonymous author did not have any knowledge of this [entity], he misunderstood that, talking about the stone of philosophers, that is, this universal medicine, I was thinking of the transmutation of metals as if such a transmutation were the supreme

medicine of the human body. He was also ignorant of the fact that in the microcosmic man lie hidden the mines of imperfect metals from which many sicknesses are propagated; necessarily a good, pious and wise doctor should reduce them into gold and silver, that is, the perfect purification through the virtue of that very remarkable and precious medicine if we want to reach sanity and good health [...].³¹

After establishing the existence of the universal medicine, Du Chesne tries to explain its origin through the interpretation of the Creation story of *Genesis* in chymical terms especially used for distillation. Here again his *modus operandi* is always the same: to demonstrate the concordance of the eminent ancients such as Plato and Aristotle with the Hermetists, that is, the chymical philosophers under the authority of the Bible. For Du Chesne the knowledge of the Hermetists is in total agreement with the true philosophy of Moses who, hearing the words of God, recorded them in the book of *Genesis*.³²

6. Humanism, *Prisca Theologia* and Paracelsianism

We have seen so far the essential points of Du Chesne's chymical philosophy. The key to his chain of reasoning is without doubt the belief in the *prisca theologia*, typical of Renaissance humanist culture. Indeed before him Severinus paved the way by adopting the humanist method and calling upon the *prisca theologia* belief in order to establish the legitimacy of Paracelsian medicine as a real heir of the ancient wisdom. But he did not really address the question of its compatibility with religion. The new orientation of Paracelsianism, based on the humanist *prisca theologia* belief in its very Christianized form, was probably one of the most important contributions made by Du Chesne. The influence of the French medical humanist Jean Fernel (1497-1558) can be recognized in this new direction. Indeed Fernel made recourse especially to Ficinian Platonism to construct his own natural philosophy in which a Christian perspective had significant weight.³³ It is also noteworthy that, before settling in Geneva, Du Chesne went to Germany and matriculated at the University of Tübingen where he studied philosophy under the humanist professor Jacob Degen *alias* Schegk (1511-87). He admired Schegk as his "second father" whose method of learning was seminal in his formation years.³⁴ De Chesne's work thus bears witness to the impact of humanist culture, transmitted through the lens of Fernel, Schegk and Severinus. This provides us with a good example of interaction between Renaissance humanism and Paracelsian chymical philosophy.

Finally let us briefly touch on the influence of Du Chesne. His discussions inspired his fellow Paracelsians to develop diverse chymical interpretations of *Genesis* and some related theological issues. In this connection two writers are most worth mentioning among the early seventeenth-century followers of Paracelsus. One is Oswald Croll (ca. 1560-1608) who was active at the court of Emperor Rudolf II (1552-1612) in Prague and composed an extremely successful treatise *Basilica chymica* (Frankfurt, 1609). The other is the English theosophist Robert Fludd (1574-1637) who was involved in a number of bitter polemics with the prominent protagonists of the “new science” such as Johannes Kepler (1571-1630) and Pierre Gassendi (1592-1655). His major publication was the famous *Utriusque cosmi... historia* (Oppenheim, 1617-21). In their most accomplished and influential works of the Paracelsian movement the chymical interpretation of *Genesis* played a crucial role. Needless to say, both Croll and Fludd closely followed the footsteps of Du Chesne.³⁵

Notes

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¹ Lynn Thorndike, *A History of Magic and Experimental Science* (New York: Columbia University Press, 1941), 5: 617-51. See also Allen G. Debus, *The Chemical Philosophy* (New York: Science History Publications, 1977); idem, *The French Paracelsians* (Cambridge: Cambridge University Press, 1991); Didier Kahn, *Alchimie et paracelsisme en France à la fin de la Renaissance (1567-1625)* (Paris: Droz, 2007).

² See Jole R. Shackelford, *A Philosophical Path for Paracelsian Medicine: The Ideas, Intellectual Context, and Influence of Petrus Severinus, 1540-1602* (Copenhagen: Museum Tusculanum Press, 2004); Hirai, *Le concept de semence*, 217-65.

³ See Charles D. Gunnøe Jr, “Thomas Erastus and His Circle of Anti-Paracelsians,” in *Analecta Paracelsica*, ed. Joachim Telle (Stuttgart: Steiner, 1994), 127-48; idem, “Erastus and Paracelsianism: Theological Motifs in Thomas Erastus’ Rejection of Paracelsian Natural Philosophy,” in *Reading the Book of Nature*, ed. Allen G. Debus and Michael T. Walton (Kirkville: Sixteenth Century Journal Publishers, 1998), 45-65.

⁴ On his life and work, see *Dictionary of Scientific Biography*, 4 (1971), 208-10; Debus, *Chemical Philosophy*, 100-109, 148-53, 160-68; Kahn, *Alchimie et paracelsisme*, 233-50, *passim*.

⁵ Josephus Quercetanus, *Ad Jacobi Auberti... brevis responsio*, repr. in *Theatrum chemicum* (Strasburg: Lazarus Zetzner, 1659), 2: 151: "Ad Paracelsum vero quod attinet, equidem mihi nequaquam proposui illius theologiae patrocinium suscipere, neque ipsi in omnibus astipulari unquam cogitavi, tanquam in eius verba iurassem. Sed praeter id testimonium quo Erasmus illum quibusdam epistolis ornavit, ausim ego dicere et tueri, multa illum pene divinitus in re medica docere, et quae nunquam satis admirari et praedicare grata posteritas possit [...]."

⁶ On Zwinger, see Carlos Gilly, "Zwischen Erfahrung und Spekulation: Theodor Zwinger und die religiöse und kulturelle Krise seiner Zeit," *Basler Zeitschrift für Geschichte und Altertumskunde* 77 (1977), 57-137 and 79 (1979), 125-223.

⁷ Josephus Quercetanus, *Liber de priscorum philosophorum verae medicinae materia* (Saint-Gervais: Eustache Vignon, 1603). This treatise and its French translation of 1626 have been digitized by the Bibliothèque Inter-Universitaire de Médecine (BIUM) of Paris for the project "The Medical Context of Scientific Revolution." See <http://www.bium.univ-paris5.fr/histmed/medica/cote?32649x01>

⁸ [Anonymous], *Apologia pro Hippocratis et Galeni medicina adversus Quercetani librum* (Paris: Hadrian Périer, 1603).

⁹ See Reijer Hooykaas, "Die Elementenlehre der Iatrochemiker," *Janus* 41 (1937), 1-28, esp. 8-15; Debus, *Chemical Philosophy*, 161-66; Hiro Hirai, "Paracelsisme, néoplatonisme et médecine hermétique dans la théorie de la matière de Joseph Du Chesne," *Archives internationales d'histoire des sciences* 51 (2001), 9-37; Didier Kahn, "L'interprétation alchimique de la Genèse chez Joseph Du Chesne dans le contexte de ses doctrines alchimiques et cosmologiques," in *Scientiae et artes: Die Vermittlung alten und neuen Wissens in Literatur, Kunst und Musik*, ed. Barbara Mahlmann-Bauer (Wiesbaden: Harrassowitz, 2004), 641-92.

¹⁰ Josephus Quercetanus, *Ad veritatem hermeticae medicinae ex Hippocratis veterumque decretis ac therapeusi* (Paris: Abraham Saugrain, 1604). Hereafter the reference is indicated as *Ad veritatem*, 1.2, 3 [bk. 1, ch. 2, p. 3].

¹¹ *Ad veritatem*, 1.1, 4-6. Cf. Strabo, *Geography*, 17.1; Diodorus of Sicily, *Historical Library*, 1.15.9-1.16.2. See also André-Jean Festugière, *La révélation d'Hermès Trismégiste* (Paris: Gabalda, 1942-50); Frances A. Yates, *Giordano Bruno and the Hermetic Tradition* (London: Routledge, 1964); Sylvain Matton, "L'Égypte chez les 'philosophes chimiques' de Maier à Pernety," *Les études philosophiques*, avril-juillet (1987), 207-26; Antoine Faivre and Frederick Tristram, eds., *La présence d'Hermès Trismégiste* (Paris: Michel, 1988); Anthony Grafton, *Defender of the Text: The Traditions of Scholarship in an Age of Science, 1450-1800* (Cambridge MA: Harvard University Press, 1991), 145-77; Martin Mulsow, ed., *Das Ende des Hermetismus* (Tübingen: Siebeck, 2002).

¹² *Ad veritatem*, 1.1, 9: "[...] magno illi Petro Severino Dano, prima et elegantiora meorum in hac scientia studiorum redimenta accepta fero."

¹³ *Ad veritatem*, 1.12, 148-49: "Prima igitur natura naturans Deus est. Secunda, vero, quae proprie natura est, subdividitur in universalem et particularem. Universalis ordinaria est illa Dei potentia, per totum orbem diffusa, a qua dicitur natura hoc vel illud pati, item hoc vel illud agere, ut docet Aug. 2 *De civitate Dei*

[...].” Aristotle himself did not invent the idea of *natura naturans* and *natura naturata* but it is of the medieval origin. See *Historisches Wörterbuch der Philosophie* 6 (1984), cols. 504-509; Hermann Siebeck, “Über die Entstehung der Termini *natura naturans* und *natura naturata*,” *Archiv für Geschichte der Philosophie* 3 (1890), 370-78; Henry A. Lucks, “*Natura naturans*–*Natura naturata*,” *New Scholasticism* 9 (1935), 1-24; Olga Weijers, “Contribution à l’histoire des termes *natura naturans* et *natura naturata* jusqu’à Spinoza,” *Vivarium* 16 (1978), 70-80.

¹⁴ See Josephus Quercetanus, *De signaturis rerum internis specificis, ab hermeticis philosophis multa cura, singularique industria comparatis, atque introductis*, in *Liber de priscorum*, 89-130. On the idea of *signatura rerum*, see Massimo L. Bianchi, *Signatura rerum: segni, magia e conoscenza da Paracelso a Leibniz* (Rome: Ateneo, 1987); Wilhelm Kühlmann, “Oswald Crollius und seine Signaturenlehre: Zum Profil hermetischer Naturphilosophie in der Ära Rudolfs II.,” in *Die okkulten Wissenschaften in der Renaissance*, ed. August Buck (Wiesbaden: Harrassowitz, 1992), 103-23.

¹⁵ *Ad veritatem*, 1.12, 149. Cf. Aristotle, *On the Soul*, 1.5, 411a7-11.

¹⁶ *Ad veritatem*, 1.12, 149-50: “Praeterea ea est natura universalis, de qua Plato loquitur in *Timaeo*, quum ait: *Natura est quaedam vis infusa per omnia, corporum moderatrix et nutrix, principium motus et quietis per se in ipsis*. Quam naturam Hermes Trismegistus iisdemmet fere verbis dicit esse vim quandam a prima causa subortam diffusam per omnia corpora, per se, principium motus et quietis in ipsis. Hanc vim Pythagorici dicebant esse Deum: ideoque Virgilius magnus Pythagoricae disciplinae sectator, sic scribebat: *Spiritus intus alit, etc.* Platonici animam mundi eam vocarunt.”

¹⁷ On the idea of the World-Soul in the Renaissance, see Hiro Hirai, “Âme de la terre, génération spontanée et origine de la vie: Fortunio Liceti critique de Marsile Ficin,” *Bruniana & Campanelliana* 12 (2006), 451-69; idem, “L’âme du monde chez Juste Lipse entre théologie cosmique romaine et *prisca theologia* renaissante,” *Revue des sciences philosophiques et théologiques* 93 (2009), 251-73; idem, “The World-Soul, Providence and Eschatology: Seneca’s *Naturales Quaestiones* in Justus Lipsius’s *Physiologia Stoicorum*,” in *Seneca e le scienze*, ed. Francesco Citti and Marco Beretta (Florence: Olschki, forthcoming).

¹⁸ *Ad veritatem*, 1.12, 150-51: “Quin et addunt ab anima illa mundi formas rerum, virtutes, potestatesque omnes proficisci, quibus res omnes foveantur, sustentantur ac subsistunt. Ac quemadmodum anima et corpus in unum colligantur, spiritus tanquam vinculi utrumque coniungentis beneficio, quod utriusque naturae sit particeps: sic anima et corpus mundi vincla sunt ac cohaerent, mediantibus ac intercedentibus spiritibus aethereis [...].” On Ficino’s theory of the spirit, see Daniel P. Walker, *Spiritual and Demonic Magic from Ficino to Campanella* (London: The Warburg Institute, 1958); Sylvain Matton, “Marsile Ficin et l’alchimie, sa position, son influence,” in *Alchimie et philosophie à la Renaissance*, ed. Jean-Claude Margolin and Sylvain Matton (Paris: Vrin, 1993), 123-92; Hiro Hirai, “Concepts of Seeds and Nature in the Work of Marsilio

Ficino,” in *Marsilio Ficino: His Source, His Circle and His Legacy*, ed. Michael J. B. Allen and Valery Rees (Leiden: Brill, 2002), 257-84.

¹⁹ *Ad veritatem*, 1.12, 151: “At per mundi animam Platonici potius spiritum quendam nobis significarunt, omnia foventem, animantem, conservantem ac sustentantem, quasi quoddam spiritus illius Elohim, qui ferebatur aut incubabat super aquas, vestigium. Cuius etiam Plato, utpote historiae *Genesis* non ignarus, meminisse potuit, et animam inde suam mundi construere.”

²⁰ On the *prisca theologia*, see Daniel P. Walker, *The Ancient Theology: Studies in Christian Platonism from the Fifteenth to the Eighteenth Century* (London: Duckworth, 1972); Cesare Vasoli, “Dalla pace religiosa alla *prisca theologia*,” in *Firenze e il concilio del 1493*, ed. Paolo Viti (Florence: Olschki, 1994), 1: 3-25; idem, “Il mito dei *prisca theologi* come *ideologia* della *renovatio*,” in idem, *Quasi sit Deus: studi su Marsilio Ficino* (Lecce: Conte, 1999), 11-50; Wilhelm Schmidt-Biggemann, *Philosophia perennis: Historical Outlines of Western Spirituality in Ancient, Medieval and Early Modern* (Dordrecht: Springer, 2004); Kuni Sakamoto, “Creation, Trinity and *prisca theologia* in Julius Caesar Scaliger,” *Journal of the Warburg and Courtauld Institutes* 73 (2010), forthcoming.

²¹ *Ad veritatem*, 1.12, 152-53: “Ex qua spiritus vivificantis virtute magnus ille Trismegistus prae omnibus aliis philosophis in sacris Mosis scriptis versatissimus et exercitatissimus, divina haec eloquia protulit libro 2 qui *Asclepias* vocatur: *Spiritu* (inquit) *agitur et gubernatur omnis in orbe spiritus. Spiritus implet omnia: mundus nutrit corpora, spiritus animat. Spiritu ministrantur omnia et vegetantur in mundo*. Postea addit: [...] *hoc spiritu ut ante sepe diximus, omnia indigent. Omnia enim portat, pro cuiusque dignitate omnia vivificat et alit. A fonte sancto producitur vita et spiritus faecundissimus*. Ex quibus verbis utique divinis aperte liquet, aethereum hunc et vivificum spiritum ubique in omnes res infusum ac insitum: unde non sit absurdum, omnium rerum naturalium actiones, vires ac potestates a spiritibus tanquam causis deducere ac derivare.” Cf. *Asclepius*, 6, 16, 17, 18.

²² On the chymical quest for the spirits, see Norma E. Emerton, *The Scientific Reinterpretation of Form* (Ithaca: Cornell University Press, 1984), 179-93; Allen G. Debus, “Chemistry and the Quest for a Material Spirit of Life in the Seventeenth Century,” in *Spiritus*, ed. Marta Fattori and Massimo L. Bianchi (Rome: Ateneo, 1984), 245-63; Antonio Clericuzio, “The Internal Laboratory: The Chemical Reinterpretation of Medical Spirits in England (1650-1680),” in *Alchemy and Chemistry in the 16th and 17th Centuries*, ed. Piyo Rattansi and Antonio Clericuzio (Dordrecht: Kluwer, 1994), 51-83; Hirai, *Le concept de semence*, passim.

²³ Robert Boyle’s use of the term “hypostatical principle” comes from Du Chesne’s discussion. Cf. Hiro Hirai and Hideyuki Yoshimoto, “Anatomizing the Sceptical Chymist: Robert Boyle and the Secret of his Early Sources on the Growth of Metals,” *Early Science and Medicine* 10 (2005), 453-77.

²⁴ See Hirai, *Le concept de semence*, 186-87, 234-35, 299, 306; idem, “Les *logoi spermatikoi* et le concept de semence dans la minéralogie et la cosmogonie de Paracelse,” *Revue d'histoire des sciences* 61 (2008), 245-64.

²⁵ *Ad veritatem*, 1.14, 171-72.

²⁶ *Ad veritatem*, 1.14, 172: “Quae quidem elementalia corpora artifex non solum separare seorsim potest, sed et in nihilum redigere: ita ut separatis passivis et materialibus elementis, tria tantum illa hypostatica formalia et activa principia remaneant, quae in unum corpus contracta, corpus mixtum efficiunt, quam quintam aut quartam essentiam vocant philosophi, quae omni corruptione caret, perfectione et vivificis spiritibus abundans, cum contra sola elementa, a tribus principiis separata, nihil nisi impuritates, corruptiones et mortificationem minantur.” On the notion of the quintessence, see F. Sherwood Taylor, “The Idea of the Quintessence,” in *Science, Medicine and History*, 1: 247-65; Paul Moraux, “Quinta essentia,” in *Realencyclopädie*, 24.1 (1963), cols. 1171-1263; Robert Halleux, “Les ouvrages alchimiques de Jean de Rupescissa,” *Histoire littéraire de la France* 41 (1981), 241-77; Michela Pereira, “Quintessenza alchemica,” *Kos* 1.7 (1984), 33-54.

²⁷ *Ad veritatem*, 1.14, 174-75: “At quum Moses nullam fecerit libro *Genesis* cap. 1 (in quo creationem rerum omnium docet) ignis mentionem: nos libentius divini vatis sententiae, quam ethnici philosophi ratiocinationibus astipulamur: nec alium idcirco ignem agnoscimus, quam caelum et aetherem a flagrando, et ardendo dictum, ut iam docuimus. Itaque caelum quartum formale ac essenziale elementum, aut quarta potius essentia, ex reliquis elementis extracta: (quintum enim esse, seu quintam essentiam iam respuunt Hermetici, quod quatuor non sint elementa, unde quinta educatur essentia, sed tria tantum, ex quibus quarta elicitor essentia) dici debet [...].”

²⁸ See Hirai, *Le concept de semence*, 206-207, 234-35. On the new status of heaven and the cosmic heat in its Hippocratic dimension, see Hiro Hirai, “*Prisca Theologia* and Neoplatonic Reading of Hippocrates in Fernel, Cardano and Gemma,” in *Cornelius Gemma: Cosmology, Medicine and Natural Philosophy in Renaissance Louvain*, ed. Hiro Hirai (Rome: Serra, 2008), 91-104; idem, “Il calore cosmico in Telesio fra il *De generatione animalium* di Aristotele e il *De carnibus* di Ippocrate,” in *Thylessius Redivivus: Bernardino Telesio tra naturalismo rinascimentale e scienza moderna*, ed. Emilio Sergio et al. (Naples: Rubbetino, forthcoming).

²⁹ *Ad veritatem*, 1.14, 175. Hooykaas, “Die Elementenlehre,” 12, notes the strangeness of the quintessence’s “composite” nature despite its being the purest and simplest substance of all.

³⁰ *Ad veritatem*, 1.14, 176.

³¹ *Ad veritatem*, 1.14, 178: “Quae cum sit simplicissima, defaecatissima et incorrupta, quinta essentia dicitur (quam nos malumus quartam essentiam vocare) et lapis caelestis philosophorum. Cuius quidem cum nullam adhuc cognitionem habuerit anonymus: male putavit, cum de lapide philosophorum loquerer, hoc est, universali illa medicina, me de transmutatione metallorum cogitasse, quasi

eiusmodi transmutatio summa esset corporis humani medicina. At nescivit perinde in homine microcosmico latere imperfectorum metallorum fodinas, unde tot morbi enascuntur, ut necesse sit a bono et fideli medico non ignaro, in aurum et argentum reducere, nempe in perfectam purificationem virtute tam insignis et pretiosae medicinae, si sanitatem ac prosperam valetudinem consequi velimus.”

³² On the chymical interpretation of *Genesis*, see Debus, *Chemical Philosophy*, passim; Norma E. Emerton, “Creation in the Thought of J. B. Van Helmont and Robert Fludd,” in *Alchemy and Chemistry in the 16th and 17th Centuries*, 85-101; Michael T. Walton, “Genesis and Chemistry in the Sixteenth Century,” in *Reading the Book of Nature*, 1-14; Hiro Hirai, *Le concept de semence*, passim; idem, “Interprétation chymique de la création et origine corpusculaire de la vie chez Athanasius Kircher,” *Annals of Science* 64 (2007), 217-34.

³³ On Fernel, see Hirai, *Le concept de semence*, 83-103; idem, “Alter Galenus: Jean Fernel et son interprétation platonico-chrétienne de Galien,” *Early Science and Medicine* 10 (2005), 1-35; idem, *Medical Humanism and Natural Philosophy: Renaissance Debates on Matter, Life and the Soul* (Leiden: Brill, forthcoming).

³⁴ See Walter Pagel, *New Light on William Harvey* (Basel: Karger, 1976), 56. On Schegk, see *Dictionary of Scientific Biography* 12 (1975), 150-51; Hiro Hirai, “The Invisible Hand of God in Seeds: Jacob Schegk’s Theory of Plastic Faculty,” *Early Science and Medicine* 12 (2007), 377-404.

³⁵ On the case of Croll, see my article “The Word of God and the Universal Medicine in the Chymical Philosophy of Oswald Croll,” in *Alchemy in the Age of Rudolf II*, ed. Ivo Pirs et al. (Prague: Artefactum, forthcoming). On Fludd and Gassendi, see Sylvie Taussig, *L’Examen de la philosophie de Fludd de Pierre Gassendi par ses hors-texte* (Rome: Serra, 2009).

THE MAKING OF CHEMICAL MEDICINES IN VALENCIA DURING THE 16TH CENTURY: LLORENÇ COÇAR

MARÍALUZ LÓPEZ TERRADA,
INSTITUTO DE HISTORIA DE LA MEDICINA Y DE LA CIENCIA
“LÓPEZ PIÑERO”. UNIVERSITAT DE VALÈNCIA-C.S.I.C.

1. A new biography

The Valencian physician Llorens Coçar or Cozar has been the object of various studies that have underscored his position as one of the few followers of chemical medicine in the sixteenth-century Spain. This focus stems as much from a medical work by him with clear Paracelsan affinities¹, as from his two-year tenure as the holder of the only university chair dedicated to the instruction of the use of chemical medicines in Europe at the time. Furthermore, there have been studies of Coçar for his unique role as the only physician named by Philip II as *protomédico* of the Kingdom of Valencia.² Thus the importance of Coçar for the history of Spanish Paracelsianism is an aspect that takes on particular saliency if we keep in mind that the principal responsibility of the *protomédico* consisted in visiting druggists's shops and the control of the medicines that they dispensed. That is to say that Philip II granted the oversight of the preparation and sale of medical substances in Valencia to a physician who was an open supporter of the use of remedies substantially different than those associated with the Galenic *materia medica*. In this way, and when confronted with local institutions of control of medical practice with their origins in the Middle Ages, the monarchy yet again appears as a factor contributing to the renovation of scientific beliefs, giving its support to men who were clearly related to innovative movements away from the royal court, and attempting to give them social recognition. On the other hand, I am able to confirm that iatrochemical medicine was openly practiced, and even integrated into the academic system in the city of Valencia, during the last two decades of the sixteenth century.

Llorenç Coçar was born in Valencia around 1540³. Coçar was a man short of stature, very thin, hunchbacked, and had a grey beard. He lived in the city of Valencia, on Salines street, in front of the monastery of Saint Francis. In 1560 he was married to the daughter of a weaver named Vicenta Herrera, with whom he had two children: Serafi Coçar, presbyter and doctor in theology and rector of the parish of Cofrentes⁴ and Esperança Coçar, who married a Jeroni Cotanda, who himself was a chair in medicine at the university.⁵

Information collected by Rodrigo Pertegás, and studies by López Piñero and Pardo⁶, show that Llorenç Coçar was born in Valencia around 1540 and that he studied medicine at the local University (the *Studi General*), where he was the student of noted figures of Renaissance medical humanism such as Lluís Collado, Miquel Joan Pascual y Joan Plaza⁷. In 1584, he was proposed, upon the recommendation of the Duke of Nájera (the former viceroy of Valencia, in other words, the representative of the monarch to the kingdom), as a physician of the tribunal of the Inquisition in Valencia.⁸ From 1585 until his death, he occupied a chair in medicine at the university, first in surgery and, in the academic year 1591-1592 the chair *De remediis morborum secretis*.⁹ Coçar's nomination to the post of *protomédico* was granted in the palace of the Escorial on October 21, 1589; this was followed by another document¹⁰ in which Philip II explained in concrete terms what the physician should do and how he should go about it. Among the contents of these documents, it is interesting to note that, although the rest of the responsibilities of the *protomédico* are rather vaguely defined,¹¹ the subject of visits to apothecaries is minutely detailed and stipulates that the wages of the *protomédico* should be paid from the fines he imposed during these visits.¹² It appears, then, that the inspection of druggists' shops is characterized as the primary task of the Valencian *protomédico*.¹³

According to his will¹⁴ and other documents related to the lawsuit we discuss below, Llorenç Coçar fell ill in the spring of 1592, when he was preparing to visit apothecaries in Orihuela, in the south of the kingdom of Valencia, at the orders of Philip II. By May of that year, he must have been quite gravely ill, given the fact that he was not named professor for the ensuing year.¹⁵ Because of his frail health, on June 6 he drew up his will. He died on July 27, 1592. The will provides little new information and follows the format usual at the time.¹⁶ He leaves the majority of his belongings to his wife and, following her death, to his son, with a small provision for his daughter (given the fact that she was already married with her dowry paid). Thirty *libras* were left for his funeral and for masses to be said for the salvation of his soul in the parish of San

Salvador. He requested to be interred in the monastery of the Corona de Jesús or, if this were impossible, in the parish of Sant Joan del Mercat. Because they had no young children, there was no inventory made of his belongings.

2. The legal conflict as *Protomédico*

In Valencia, regional control of medicine, surgery, and pharmacy was initiated in the fourteenth and fifteenth centuries through territorial laws, or *fueros*.¹⁷ These controls, generally effected through guilds, culminated in 1499 with the creation of the Valencian university (*Estudi General*), which led to regulated university medical study.¹⁸ City authorities had exclusive responsibility for the regulation of all health practices. In turn, the city constituted the nucleus of a system that extended to the rest of the kingdom of Valencia, thanks to the city's political and economic characteristics. This system continued unaltered for centuries, until the *Subdelegación del Protomedicato* was established in Valencia as part of the Bourbon policy of centralization on November 18, 1749.¹⁹

The Valencian system controlled education, licensing, and practice and had three clearly differentiated parts, pertaining to physicians, surgeons, and apothecaries. Physicians attended the municipal university, while the education of surgeons and apothecaries was an apprenticeship system overseen exclusively by their own guilds and regulated by their respective colleges. The processes negotiated to assure professional competency included an examination with theoretical and practical components.

As one might guess, Coçar's nomination to the post of *protomédico* caused a series of legal conflicts with local institutions (specifically, the colleges of surgeons and apothecaries) which effectively controlled medical practice without the help of a royally appointed *protomédico*. Specifically, there was an accusation, followed by a lawsuit that lasted from 1589 (the year of his appointment) to 1592 (the year of his death). The suit was lodged by Coçar against the colleges of surgeons and apothecaries, the medical school of the university, and the representatives of the three branches of the *Cortes*, with the simple object of being allowed to perform the job he had been designated to carry out by Philip II.²⁰ During the three years that the lawsuit lasted, the king vigorously supported Coçar's suit. Philip put his own procurador patrimonial (i.e. the person responsible for defending the monarchy's interests in the Kingdom of Valencia) in charge of Coçar's defense. But the king also wrote a series of letters himself, transcribed into the court records, giving concrete instructions for Coçar's defense and answering a question posed by the

college of apothecaries insinuating that the *protomédico* may have been deceiving the king. Philip's response clearly demonstrates his support of Coçar.²¹:

*"Ha parecido que la defensa del exercicio y preheminencia que pretende el doctor Coçar toca a mi regio fisco enteramente, por ser el oficio de protomedico real, y a provision mia y muy necesario para el bien universal de esse Reyno que es lo que se pretende conseguir por su medio sin que este en libertad de los boticarios, como estaria, no haviendo quien los visite, hazer el daño que o con poca habilidad o con descuydo podrian los naturales de ese Reino. Y assi os encargo ordenneys al procurador patrimonial que salga a la defensa de esta causa, y la tome por propia y la siga como a tal, a costa del regio fisco, haciendo las instancias que fueren necesarias. Para que a mi regia corte le quede la facultad que se entiene tiene para dar al officio de protomedico el exercicio y preheminencia que se pretende"*²².

I will not go into details of this long lawsuit, because it was more concerned with politics than medicine, in particular the tensions between local authorities attempting to maintain their privileges and Philip II, who was trying to consolidate political authority in the territory.²³ What is most interesting to me is that two aspects of early modern Valencian medical practice can be clearly seen in this lawsuit: first, the systems of control of medical practice; and second, the prevalence of medical pluralism, more concretely, the extra-academic medical practices at the margins of officialdom. The colleges of surgeons and apothecaries used Coçar's support of chemical medicine as an argument in favor of having him declared unfit to occupy the post. The fact that Coçar prepared medicines at home provoked the displeasure of apothecaries. They also attempted to demonstrate that Coçar was unfit for the position because as a physician, he had no training in "farmacopolía", which was, above all, a practical art. Still further, they accused Coçar of prescribing and making strange and unfamiliar medicines at home, insisting that these were ineffectual and even dangerous. They denounced the high prices of these medicines, prices he was able to charge because the medicines were not available in druggists' shops and did not conform to usual practices and knowledge.

The accusations were not confined to matters of professional disagreement. Apothecaries made veiled accusations that Coçar was not an "Old Christian" (in other words, that he was a crypto-Jew) and that it was his wife who actually prepared the medicines. To demonstrate this, they turned to a tactic common in the court proceedings of the era, known as "*testificales*". These consisted of a sealed questionnaire presented before a judge by one of the parties to the suit. In what followed, a series of

expressly named witnesses would answer the questions and justify their knowledge of the events. On December 4, 1590, Joseph Ridau, a notary and representative of the college of apothecaries presented such a questionnaire with twenty questions that first had to be answered by Coçar himself. The preliminary eight questions had as their common theme the long-standing, diligent, and efficacious control of druggists in the Kingdom of Valencia by the college, alluding to the excellence of the education it offered to its members. These questions were designed to demonstrate publicly that the college was and had always been entirely capable of controlling everything related to their craft and, in addition, that their oversight of practice was supported and justified by territorial laws and common usage from time immemorial. The remaining twelve questions sought to paint a picture of the unsuitability of Coçar for the job. Their end was to show him to be incapable of overseeing the manufacture and sale of medicines, not only because he was not himself a druggist, but also because he had no knowledge of the practical art of “farmacopolia,” of which university-trained physicians knew, they alleged, nothing.²⁴ Still further, the strange medicines that Coçar sold held no resemblance to those he was responsible for controlling. Thus, these twelve questions pointedly describe the reality of medical practice of a university-trained follower of chemical medicine in late sixteenth-century Valencia.

But in addition, these questions reveal something equally important: we find in the suit documentary evidence that makes patent Philip’s support of Paracelsianism and its practitioners away from the royal court. In other words, Philip II’s support of Coçar is not simply indicative of the monarch’s interest in widening his sphere of influence or and protecting his choice of *protomédico*. This helps to undercut, to a certain extent, the suggestion that Spanish Paracelsianism has a generally courtly character.²⁵ On January 4, Philip wrote a second letter to the viceroy in which the monarch requests that there be an immediate end to the apothecaries’ accusations and that the viceroy attempt to have the suit dismissed.²⁶ Additionally, on January 25 there arrived a royal order that the final twelve questions of the *testifical* be eliminated. According to this royal order, only Coçar should be asked the twelve questions; the other witnesses would be restricted to answering questions relative to the college of apothecaries, its good name, and its operation. I conclude from this that Philip II intended that there be no official record of the harsh criticisms of Coçar’s practices, which had been considered by the *procurador patrimonial* as irrelevant to the case at hand, prejudicial to the physician’s cause, and contrary to the expressed desires of the monarch.

3. The practice of chemical medicine

During the interrogational phases of the suit, the apothecaries relied on the authority of university physicians and Galenic medicine to establish the inefficacy and dangerousness of Coçar's remedies. The suit noted that the physicians of the city refused to prescribe this type of medicine, deeming it harmful and, what is more, characteristic of the empirical medicine not found in the medical manuals they used. Coçar himself, as he explains in his *Dialogos veros medicinae fontes indicans*, was radically opposed to the use of Galenic *materia medica*. So, in the course of the text, there are many allusions to his adversaries and the extent to which they were mistaken with regards to his methods, comments that can be taken as responses to the accusations lodged against him. In this vein, the apothecaries also pointed to the existence of patients that had complained of the harm done them by the use of Coçar's medicines (literally "fa i experimienta"). According to the opinions given by these former patients—who were never able to give a full declaration of their grievances—they would have been cured of their ills if they had followed the methods of traditional medicine and had taken recognized and approved medicines. That is to say, they felt sure they would have improved more satisfactorily had they turned to Galenic remedies.

These accusations without a doubt reflect, at least to some extent, the debate among Galenists and Paracelsians, although with an important caveat. During the very years that this suit was brought, Coçar held a university chair entitled *De remediis morborum secretis*, dedicated to instructing students in the proper use of chemical medicines. This meant that the very Galenists that confronted Coçar and refused to consider his opinions seriously in professional meetings were his colleagues and fellow chairs in the medical college of the University. Every indication is that his relationships with the other chairs were strained. On the one hand, they claimed, in the eleventh question of the *testifical*, that when Coçar suggested the use of his remedies at meetings of physicians, the other doctors refused to comply, considering them to be neither effective nor healthful, but rather strong, dangerous, and worthy of reprove. Besides this, they were remedies that were not based on the authority of the classics and were consequently deemed merely empirical. The reaction of Coçar's colleagues is not surprising. Coçar included in his book, published that very year, a dedicatory epistle directed to his colleagues; Coçar begs, with a measure of sarcasm, for their help in ending these squabbles and conflicts.²⁷

As I have mentioned, Coçar was not only accused of practicing dangerous, unorthodox medicine, but of charging his patients exorbitant amounts. Thus, there is also an accusation of bad medical practice. In fact, in several of the questions never answered by the witnesses, the druggists said that he took advantage of his patients, who trusted his chemical medicines, remedies for which patients had paid a great deal. The troubled relations between the *protomédico* and his colleagues were apparent here, too. Coçar defended himself by saying that he had to make the medicines himself because, although he wanted to teach others to make them, they majority of apothecaries were “enemies of anything that might cost them effort or work” (*enemichs de fer cosa que tinga costa y treball*). Nevertheless, it seems that he had arrived at some form of agreement with one of the apothecaries, whose name is not listed in the court documents, who was to sell (or give free of charge) these remedies to the sick. At the same time, the testimony of the apothecaries was that Coçar was illicitly enriching himself through the high prices he charged. One of the questions makes reference to a medicine called “cinnamon oil” (*olli de canella*), to demonstrate the vast disparity between the cost of preparation and the price Coçar charged. The apothecaries also argued that they themselves did not produce this medicine because it was not one of those found among the compounds usually sold in druggists’ shops nor was it to be found in medical texts; this meant that Coçar had an effective monopoly on the sale of *olli de canella* and anyone wishing to purchase it had to buy it from him.²⁸ In any case, in this period prepared chemical medicines were much more expensive than traditional Galenic remedies, as some have noted, due to the ways in which they were produced; this meant that they were largely associated with more privileged social groups.²⁹ Coçar’s answer to these criticisms was almost always the same: that in the majority of cases, he freely gave his patients the “most extraordinary” (*molt extraordinaries*) distillations and oils, that he made himself and that he actually lost money on the enterprise.³⁰

Martí Bellmont,³¹ a personal friend of Coçar’s, speaking in 1631 of the conflicts between the *protomédico* and the physicians of the city, recounted that the other physicians had little respect for Coçar, calling him an alchemist and accusing him of “use for healing the alchemies that he prepared”. Bellmont, a member of the Inquisition, demonstrates that Coçar’s conflicts with other health practitioners were exclusively professional, never religious or doctrinal. Bellmont’s comment³², made forty years after the publication of Coçar’s book on chemical medicine, confirms that Coçar subscribed wholeheartedly to chemical medicine, theoretically as well as practically.³³ Thus, the public practice of this

system of medicine, integrated within the academic system of the city of Valencia during the last two decades of the sixteenth century is described by a member of the Inquisition as the result of the resistance of local authorities to the imposition of a *protomédico* named by Philip II.

It should now be clear how medical pluralism and the control of medical practice coalesce in Coçar's case. When one considers the accusations that deal with the use of curative strategies that do not conform to traditional Galenism—cures based, among other things, on the use of chemical medicines—it becomes clear that the suit was brought in an attempt to prevent Philip II's designee from controlling the manufacture and sale of medicines. Local medical practitioners tried to frustrate the exercise of royal power by suggesting the *protomédico*'s incapacity and incompetence through reference to his unorthodox practices.

Thus, in the figure of Coçar we find, on one hand, a magnificent example of a university physician who adhered both in theory (as his book of 1589 attests) and in practice to a form of treatment different than Galenic medicine, based among other things, on the use of chemical medicines. On the other, we find someone living far from the royal court³⁴ who was the very person that Philip II chose to control, through oversight of local institutions, not only the production and sale of medicines, but also the licensing of physicians, surgeons and apothecaries, and the control of empirical practices.

4. The end of chemical medicine in Valencia

To conclude, I would like to turn to the other aspect of Coçar's biography not altogether clarified in the documentary sources recently brought to light: the question of how one of the few Paracelsans in Spain might vanish, leaving almost no archival trace. The documentary disappearing act of no less than a physician who occupied a chair dedicated to the teaching of chemical medicine has been noted by everyone who has attempted to study Coçar.³⁵ This is particularly troubling, given the fact that Coçar so clearly counted on the support of Philip II and belonged to the medical elite of the city of Valencia, although he did not practice an orthodox medicine. In general, scholars have tended to explain this disappearance in the context of the ideological repression of Philip II, making Coçar little more than another sad chapter in the long history of the "Black Legend". If we leave these concerns to one side, however, what the documentary sources clearly demonstrate is that "disappearance" of Coçar was due to his death by disease on July 27, 1592. But the striking thing it is not only the fact that he left behind so few

traces, but also that he, and Paracelsianism, had so few followers in Valencia to carry on his work. In fact, chemical medicine ceases entirely to be a subject for debate or publication for a long while after his death.

One of the possible reasons is that Jeroni Cotanda died in September, 1592, just a few months after his father-in-law. As I said before, Esperanza Coçar was married to Jeroni Cotanda. There are few reports concerning Cotanda, who was active at the end of the sixteenth century. We only know that he studied medicine at the local University (the *Studi General*), and in 1583 obtained a bachelor's degree.³⁶ In the academic year 1591-1592, he replaced his father-in-law in the chair of surgery, when Coçar was appointed to the chair *De remediis morborum secretis*, and was designated municipal "examinador"³⁷. As was normal in Valencia in this time, Cotanda's will was published upon his death and, because his children were minors, an official inventory of the estate was conducted. Although the inventory document is not particularly meticulous, there appears—in addition to the equipment and furniture one would expect a doctor's house to contain—a series of objects that could have been used in the preparation of medicines. Concretely, in a room different from the kitchen, there were found stone and copper mortars, a small furnace, different sorts of bowls and plates, several lead stills and a pitcher to cool snow³⁸. These objects, as well as the forty-nine inventoried medicine books without specifying titles³⁹, make us think that Cotanda inherited not only the chair of surgery and the *examinatura* from his father-in-law, but also the instruments necessary to manufacture the chemical remedies. This does not solve the mystery of chemical medicine's fate in Valencia, but it does provide additional information. Cotanda's death, so shortly after Coçar's, makes it clear that the mystery is even greater than we have presumed to this point. To Coçar's "disappearance," we must add that of Cotanda, if we are to explain precisely why chemical medicine vanished in Valencia after 1592.

Documentary Appendix

Llorenç Coçar's will.

Archivo del Colegio del Patriarca de Valencia. Protocolos de Martí de la Serna. Nº 17135. Año 1592.

Valencia. 1592, july 6.

En nom de la Santísima Trinitat, Amen, sa preu per tots. Yo Lorens Coçar habitador de la ciutat de Valencia. Pensant que no y ha cosa tan certa com es la mort, no tan incerta com es la hora de aquella, per la qual raho tota savia persona deu pensar en la mort sdevenidora e dispondre e ordenar de si e sos bens. Per ço que si la mort venia soptosament con sdeve a alguns, no constreyga la persona morir interesada en e per amor de aço invocada la gracia e ayuda de Nostre Senyor Deu Jesuxrist, e de la humil Verge Maria mare sua, special advocada mia y de tots los pecadors. Stant malat de greu malaltia corporal de la qual temi morir, empero por gracia de Nostre Senyor Deu en mon bon seny, memoria, integra paraula, clara y manifesta, y en tal desposicio de ma persona, que indubitadament puch testar, codicillar e fer ordenar qualsevol ultima y darrera voluntat mia, convocats, pregats e demanats los notari y testimonis deja scrits e en la presencial audientia // Feta primerament la solempnitat que per furs e bona raho del present Regne es ordenada, y aquella en res no ommissa, revocant, cessant e annullant expressament y de certa sciencia tots e qualsevols altres testaments e codicils per mi fets e ordenats per tot lo tamps passat fins en la present jornada de huy, exclusiva en poder de qualsevol notari e notaris y sots expressio de qualsevol paraula, jatsia de rogatories, de les quals no son al present, recordant les quals vull haver açi per expresades.

Ara darrerament fas y ordene aquest meu ultim testament, ultima y darrera voluntat mia del qual e de la qual elegeix marmesor y executor al magnifich y molt reverent Serafi Coçar, doctor en theologia, fill meu, al qual do (*sic*) la facultat, ple y bastant poder tants mons bens, pendre e a mans sues ocupar e aquelles vendre, alienar, dividir e partir per obs de fer e inseguir les coses pies per mi ab la present meu ultim y darrer testament dispostes e ordenades, licencia o decret de jutge algu, axi eclesiastich com secular, no requesta ni sperada ans de la admistracio per aquell fahedora.

E primerament vull e man (*sic*) tots mons deutors // e injuries sien pagats e satisfets, restituhides e tornades a aquells, empero que verdaderament y clarament appareran yo esser tengut o obligat ab cartes publiques, testimonis dignes de fe, o altra legitima prova tota prescripcio

apart possada e no admesa, o for de anima sobre aquestes coses benignament observat.

E apres preuch per la mia anima y de tots los fets (...) y en remissio de mos (*sic*) peccats, trenta lliures reals de Valencia, de les quals sia feta la mia sepultura a coneguda del dit mon fill y marmessor, y quen sien dits les misses de Sent Salvador ab sos passis y missereres. Y del que sobrara me sien dites misses de requiem per la mia anima en les Sglesies e Monestir que lo dit marmessor voldra, donantli facultat per a que si dit marmessor volrra despendre mes quantitat de les dites trenta lliures ho puga fer a sa voluntat.

Ellegint sepultura al meu cos faedora en lo Monestir de la Corona de Jesus de la present Ciutat de Valencia, en lo vas en lo qual los reverents frares de lo dit monestir sotarren, demanant merce y caritat als molt reverents guardia e pares de dit Monestir, aculliguen lo meu cos a dit ecclesiastica sepultura en dit vas. E si algu impediment hi haura //lo que no crech, y la molta caritat que en dits pares se troba, en tal cas vull que lo meu cos sia soterrat en lo vas dels pobres del fossar de la Sglesia parrochial de Sant Joan del Mercat de la present Ciutat, pagant la caritat acostumada.

Item done, deixe y lege a Sperança Coçar y de Cotanda, muller del magnífich Hieroni Cotanda, doctor en medicina, y filla mia legitima e natural, deu lliures reals de Valencia per a ques pose dol per part e per legitima. E per tot e qualsevol altre drets que en mos (*sic*) bens tinga e puixa tenir, com ja aquella estiga casada e per mi dotada, segons ma possibilitat.

En tots los altres bens meus, mobles, immobles, sehents e semovents, deutes, drets, y accions mies e a mi pertanyents e pertanyerpodents, e devents huy, prop ara o en lo sdevenidor, qualsevol titol, causa, manera y raho do (*sic*) e leix a la magnifica Vicenta Herrera y de Coçar, muller mia, molt amada y aquella hereua mia per propia e universal, en primer loch a mi fas e instituheix per dret de institucio de vida de aquella a tan solament y apres obst de aquella, en segon loch fas e instituheix hereu meu y a la dita ma muller substituheix en tots los dits bens y herencia meu al dit mossen Serafi Coçar, fill y marmessor meu, qui dessus donantili facultat // per a que puga fer totes ses planes e llibera voluntat.

Aquets es lo meu ultim y darrer testament, ultima y darrera voluntat mia, lo qual e la qual vull e man vulga per dret de darrer testament e per dret de darrer codicilis, e per testament in meu patriu e per tota aquella millor via, forma e manera que mes de justicia valer puixa e dega, e a la mia intencio sia aplicable. Lo que es fet en la Ciutat de Valencia a sis dies del mes de juliol any de la Nativitat de Nonstre Senyor Deu Jesuxrist MD

noranta y dos. [Firma] de mi dit Llorens Coçar testador qui lo present meu ultim y darrer testament lo he ex prove de la primera linea fins a la darrera inclusivament.

Primo foren testimonis a la confectio y receptio de dit testament convocats pregats e per lo dit testador demanats, los reverents mosen Batiste Vidal y Damia Calbet, preveres, y Anthoni Manya, mercader habitants de Valencia. Tots los quals interrogats per lo notari rebedor de dit testament si conexien al dit testador dieren tots que si. Y lo dit testador per lo semblant dix conexer als dits testimonis, nomenant aquelles per sos noms y cognoms. Y lo dit notari rebedor de dit testament tambe // conegue a dits testadors e testimonis.

Coçar's will publication.

Valencia, 1592, july 27.

Postea vero die intitulato vigesimo septimo dicti mensis julii, anno quo supra a Nativitate Domini M.D. nonagesimo secundo, lo preinsert testament per mi Marti de la Serna, notari publich de la Ciutat y Regne de Valencia, rebedor de aquell a instancia y requesta dels magnífichs Vicenta Herrera y de Coçar y mosen Serafi Coçar en los noms en dit testament contenguts en la casa e habitacio del dit deffunct, en la qual vivia y habitava en la devallada de Sent Francesch en la present Ciutat de Valencia, lo dia apres de la mort de dit magnífich testador. Ab alta e intelligible veu fonch lleit y publicat de la primera linea fins a la darrera inclusivament. E lleit y publicat aquell, la dita Vicenta Herrera y de Coçar // dix que acceptava la dita [herencia] ad aquella dexada per lo dit son marit, ab benefici de inventari, y sens perjuhi de sos drets. Y lo dit mosen Serafi Coçar dix que acceptava la marmesoria y tambe la substitucio de [...], protestant que non teneant [...] vires hereditaries presentibus, protestibus discretis Onuphrio Joanne Roure, notarius et Martinus Maiora, chirurgo, Valentia habitatoribus.

Huius modi clausula publicationis testamentis Laurensi Cosar, medicine doctoris, contenta ad calcem testamenti illius recepti die sexto julii anni MDLXXXII,

Huius modi clausula publicationis testamentis Laurensi Cosar, medicine doctoris.

Notes

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¹ Llorenç Coçar, *Dialogos veros medicinae fontes indicans*, Valencia, apud Petrum Patritium, 1589. There is a facsimile edition and a study: José María López Piñero, *El “Dialogus” (1589) del paracelsista Llorenç Coçar y la cátedra de medicamentos químicos de Valencia (1591)*, (Valencia: Cátedra e Instituto de Historia de la Medicina, 1977).

² José María López Piñero, *El “Dialogus” (1589). del paracelsista Llorenç Coçar y la cátedra de medicamentos químicos de Valencia (1591)*, 9-25; José María López Piñero, ‘Paracelsus and his work in 16th and 17th Century Spain,’ *Clio medica*, 1973, 8 (2): 113-41. José María López Piñero, ‘Coçar, Llorenç’, in José María López Piñero et al. (eds.), *Diccionario histórico de la ciencia moderna en España*, vol 1 (Barcelona: Península, 1983), 231-2; José Pardo, ‘Llorenç Coçar y la Inquisición Valenciana’ in *Homenatge al doctor Sebastià Garcia Martínez*, vol.1 (Valencia: Conselleria de Cultura, Educació i Ciencia, 1988), 363-73; María Luz López Terrada and José Pardo, ‘El Protomédico y sobrevisitador real a la València del segle XVI,’ *Afers* 5-6 (1988): 211-22; Allen G. Debus, ‘Paracelsus and the Delayed Scientific Revolution in Spain. A legacy of Philip II,’ in Allen G. Debus and Michael T. Walton eds., *Reading the Book of Nature: The Othe Side of Scientific Revolution* (Kirkville, Truman State University Press, 1998), 139-152; Mar Rey, *Los señores del fuego: destiladores y espagíricos en la corte de los Austrias* (Madrid, Corona Borealis, 2002). Coçar also appears in recent works on European Paracelsianism. See Olle P. Grell, *Paracelsus: the man and his reputation, his ideas and their transformation* (Leiden-Boston-Köln, Brill Academic Publishers, 1998), 333; Marcus Hellyer, *The scientific Revolution* (London: Blackwell, 2003), 173; Allen G. Debus, *Chemistry and Medical Debate* (New York: Science History Publications, 2001), 165. On the university chair and its role within university medical instruction in Valencia: José María López Piñero, ‘The Faculty of Medicine of Valencia: its position in Renaissance Europe,’ In Mordechai Feingold and Víctor Navarro Brotóns eds., *Universities and Science in the Early Modern Period* (Dordrecht: Springer, 2006), 78-80. His *Dialogos veros medicinae fontes indicans* has also been studied as an example of the Renaissance dialog. Roger Friedlein, *El diálogo renacentista en la Península Ibérica: Der Renaissancedialog auf der iberischen Halbinsel* (Stuttgart: Franz Steiner Verlag, 2005), 49-59.

³ The aspects of Coçar’s biography previously published are found in José María López Piñero, *El “Dialogus” (1589). del paracelsista Llorenç Coçar y la cátedra de medicamentos químicos de Valencia (1591)*, 14; José Pardo, ‘Llorenç Coçar y la Inquisición Valenciana,’ 363-373 and José Luis Fresquet, María Luz López Terrada eds., *Archivo Rodrigo Pertegás. Siglo XVI* (Valencia, Universitat de Valencia-Fundación Marcelino Botín, 2002). The new biographical information is

derived from archival documents, including his will (Archivo del Colegio del Patriarca de Valencia, *Protocolos de Martí de la Serna*. Year 1592, nº 17135) and court documents from the case we discuss below (Archivo del Reino de Valencia, Real Audiencia. Procesos, Parte 1ª, Letra S, nº 3074, year 1630)

⁴ Archivo del Colegio del Patriarca de Valencia. *Protocolos de Martí de la Serna*. Año 1592, nº 17135. Valencia. 1593. 3, march. Testamento de Serafi Coçar, prevere de la Seu de Valencia. He left all of his estate, with the exception of a donation to the church, to his mother, Vicenta Herrera de Coçar, and in the case of her death, to a niece and nephew, both minors: Vicenta Magdalena Cotanda and Hieroni Vicent Cotanda. These were siblings, the children of his sister, Esperanza.

⁵ Jeroni Cotanda died in September, 1592, just a few months after his father-in-law. Archivo del Colegio del Patriarca de Valencia *Protocolos de Martí de la Serna*. R. 17135

⁶ Cf. note 3.

⁷ On the Valencian medical school during this period, cf. José María López Piñero, "The Faculty of Medicine of Valencia: its position in Renaissance Europe," 65-82.

⁸ José Pardo, 'Llorenç Coçar y la Inquisición Valenciana,' 363-373. According to Pardo, Coçar was never named physician of the Inquisition because the results of the investigation into the purity of his blood were inconclusive. Cf. Archivo Histórico Nacional, "Información genealógica de Lorenzo de Cózar". Archivo Histórico Nacional, Madrid, *Inquisición*, 1306, EXP.13

⁹ José María López Piñero, *El "Dialogus" (1589) del paracelsista Llorenç Coçar y la cátedra de medicamentos químicos de Valencia (1591)*, 24; Allen G. Debus, 'Paracelsus and the Delayed Scientific Revolution in Spain. A legacy of Philip II,' 246-247; José Pardo, 'Llorenç Coçar y la Inquisición Valenciana,' 63-374.

¹⁰ Archivo del Reino de Valencia. *Real Cancillería* 432, hh. 169v-171v; *Real Cancillería* 363, hh. 47r-48r.

¹¹ The nominations say nothing of the responsibilities and competencies of the Protomédico in matters related to the control of medical practice or vigilance against encroachment, the essential tasks of the tribunal of the Protomedicato in Castile.

¹² The salary was set as twenty Castilian reales for every day spent during the inspections (Archivo del Reino de Valencia. *Real Cancillería* 363, ff. 47v-48r.)

¹³ María Luz López Terrada and José Pardo, 'El Protomédico y sobrevisitador real a la València del segle XVI,' 211-222.

¹⁴ Coçar's will is found in the Archivo del Colegio del Patriarca de Valencia.

Protocolos de Martí de la Serna. R. 17135. See documentary appendix.

¹⁵ The last payment he received as chair was for Christmas, on January 23, 1592. José María López Piñero, *El "Dialogus" (1589) del paracelsista Llorenç Coçar y la cátedra de medicamentos químicos de Valencia (1591)*, 24.

¹⁶ See documentary appendix.

¹⁷ Luís García-Ballester, Michael McVaugh and Agustín Rubio-Vela, 'Medical lisensing and learning in fourteenth-century Valencia,' *Trans. Am. Philos. Soc.* 79/6 (1988): 1-128, here 73. Concretely, the first regulatory legislation of

professional medical practice in Valencia is contained in the *Furs* granted by Alfonso IV of Aragon (1327-1336) in the *Cortes de Valencia* celebrated in 1329-1330.

¹⁸ On early modern medicine in Valencia, see José María López Piñero (ed.), *Estudios sobre la profesión médica en la sociedad valenciana (1329-1898)* (Valencia: Ajuntament de València, 1998). On the local University (*Studi General*), see Mariano Peset (coord.), *Historia de la Universidad de Valencia* (Valencia: Universitat de València, 2000), 3 vols. On doctors and the medical school, see José María López Piñero, *La Facultad de Medicina de la Universidad de Valencia* (Valencia: Facultad de Medicina, 1980); idem, *La medicina y las ciencias biológicas en la historia valenciana* (Valencia, Ayuntamiento de Valencia, 2004).

¹⁹ Mariano Peset, 'El Real Protomedicato y el ejercicio medico,' in Mariano Peset (coord.), *Historia de la Universidad de Valencia. Volumen II: La Universidad Ilustrada* (Valencia: Universitat de València, 2000), 244-247.

²⁰ Archivo del Reino de Valencia, Real Audiencia. Procesos, Parte 1^a, Letra S, n^o 3074, year 1630. For a detailed study of this process, see María Luz López Terrada, 'Llorenç Coçar: Protomédico de Felipe II y médico paracelsista en la Valencia del siglo XVI,' *Cronos* 8 (2005): 31-66.

²¹ Archivo del Reino de Valencia, Valencia, Real Audiencia. Procesos, Parte 1^a, Letra S, n^o 3074, year 1630, ff. 16-17.

²² Ibidem, 16-17. August, 1, 1590. The text, underlined in the original, is a copy of the royal letter which was included in the court documents.

²³ María Luz López Terrada, 'El control de las prácticas médica en la monarquía hispánica durante los siglos XVI y XVII: el caso de la Valencia foral,' *Cuadernos de Historia de España* 81 (2007): 91-112.

²⁴ Allegations that he was not a graduate of any university were repeated in the interrogation phase, despite the fact that Coçar was not only a graduate of the Valencian *Studi*, but that he held a chair in medicine there.

²⁵ The relationship of Philip II and alchemy has been studied by Javier Puerto et al. (eds.), *Los hijos de Hermes. Alquimia y espagiria en la terapéutica española moderna* (Madrid: Corona Boreales, 2001). Mar Rey, *Los señores del fuego: destiladores y espagíricos en la corte de los Austrias* (Madrid: Corona Borealis, 2002). Mar Rey and María Esther Alegre, 'Los destiladores de su majestad. Destilación, espagiria y paracelsismo en la corte de Felipe II,' *Dynamis* 21 (2001): 323-350.

²⁶ Archivo del Reino de Valencia, Valencia. Real Audiencia. Procesos, Parte 1^a, Letra S, n^o 3074, pp. 17-18.

²⁷ Llorenç Coçar, *Dialogos veros medicinae fontes indicans*, f. A4v. There is a facsimile edition and a study: José María López Piñero, *El "Dialogus" (1589). del paracelsista Llorenç Coçar y la cátedra de medicamentos químicos de Valencia (1591)* (Valencia, Cátedra e Instituto de Historia de la Medicina, 1977).

²⁸ In fact, this does not appear in the *Officina medicamentorum* (1601), published by the College of Apothecaries, nor is it found in the 1590 inventory of the dispensary of Valencia's General Hospital.

²⁹ Bruce T. Moran. *Distilling Knowledge: Alchemy, Chemistry, and the Scientific Revolution* (Harvard University Press, 2005). The essences, tinctures, extracts, and magisteries made from spagyrically prepared chemical medicines were costly and usually far removed from the means of the average person.

³⁰ Miguel López and Mar Rey, "Aguas destiladas y aguas alquímicas en la España moderna," *Azogue* 5 (2002-2007): 151-80. In their study of the extent of the medicinal uses of distilled waters in the Hispanic monarchy, these authors find that, as in the case of Coçar, "hasta tal punto era ésta una novedad que no todos los boticarios tratan las aguas destiladas. Menos aún aquellos con un gran apego a las teorías más tradicionalistas (galenistas) y les costaba aceptar las nuevas ideas ..., teniendo más predilección por las decocciones".

³¹ At the time of his declaration, he was canon of the cathedral of Valencia, in addition to being a member of the Inquisition. From 1611-1614 and again in 1629 he was dean of the Studi. He published a sermon in a work by Gerónimo Martínez de la Vega *Solenes (sic) i grandiosas fiestas, que la ... ciudad de Valencia a echo por la beatificación de... D. Tomas de Villanueva...* (Valencia: Felipe Mey, 1620). See Amparo Felipo, *La Universidad de Valencia durante el Siglo XVII (1611-1707)* (Valencia: Generalitat Valenciana, 1991), 21.

³² This statement was made in the context of a different *testifical*, held September 23 and October 17 of 1631. Five witnesses declared that they had personally met Coçar forty years before. The objective of this questioning was to discern whether Coçar had acted in the capacity of *protomédico*, in order to establish whether Philip IV's 1630 nomination could be justified. In 1630, Joan Francesch Rey was attempting to occupy the post. The questions were: "I. Primerament dihuen si conegueren al doctor Lorens Cosar. Si diran que no ampluis non interrogentur. Y si diran que si, diguen de quina manera de home y aspecte tenia, si era jove o vell, baix o alt, hon tenia cassa y quant temps vixque apres de ser protomedich. II. Item dihuen si saben que lo dit doctor Cosar, protomedich hague entrat en los examens dels doctors en medicina y bachillers, y en los dels apotecaris y cirurgians com a prothomedich que era de Sa Magestat en la present Ciutat y Regne. Si diran que si ampluis non interrogatur; y si diran que no, diguen per quina causa y raho. Y si hagues alguna sentencia o provisio real que lo y impedis per a no poder entrar a dits examens. III. Item diguen si saben que juras dit prothomedich Cossar de son offici en mans del tunc Virrey, o sino pogue arribar a jurar. IIII. Item diguen si saben quant temps vix que dit prothomedich Cossar apres de haver obtes lo privilegi de Sa Magestat de Prothomedich". Cf. López Terrada, 'Llorenç Coçar: Protomédico de Felipe II y médico paracelsista en la Valencia del siglo XVI,' 31-66.

³³ José María López Piñero, *El "Dialogus" (1589). del paracelsista Llorenç Coçar y la cátedra de medicamentos químicos de Valencia (1591)*, 11.

³⁴ The fact that he was one of the few Spanish Paracelsians appears in every study of Coçar's life and work. See note 2 above; and more recently, Mar Rey, 'Los paracelsistas españoles: medicina química en la España Moderna', in Víctor Navarro and William Eamon (eds.), *Beyond the Black Legend. Spain and the Scientific Revolution* (Valencia: Instituto de Historia de la Ciencia y

Documentación López Piñero, 2007), 41-55. One cannot forget that in this context the presence of Fioravanti at the court of Philip II during his trip to Spain. See William Eamon, 'The Charlatan's Trial: an Italian surgeon in the Court of King Philip II, 1576-1577,' *Cronos* 8 (2005) 3-30.

³⁵ José María López Piñero, *El "Dialogus" (1589). del paracelsista Llorenç Coçar y la cátedra de medicamentos químicos de Valencia (1591)*, 24; Allen G. Debus, 'Paracelsus and the Delayed Scientific Revolution in Spain. A legacy of Philip II,' 246-7; José Pardo, 'Llorenç Coçar y la Inquisición Valenciana,' 370-1.

³⁶ Amparo Felipo and Francisca Miralles, *Colación de grados en la Universidad Valenciana Foral (graduados entre 1580-1611)* (Valencia, Universitat de Valencia, 2002), 205.

³⁷ José Luis Fresquet, María Luz López Terrada (eds.), *Archivo Rodrigo Pertegás. Siglo XVI*.

³⁸ Archivo del Colegio del Patriarca de Valencia. *Protocolos de Martí de la Serna*. R. 1592, nº 17135.

³⁹ *Ibidem*. The first *item* is "Primo quaranta nou llibres chichs de medicina vells" (fortynine old little medicine books)

I SALIFY, THEREFORE I CAN SEE AND TOUCH: THE CASE OF THE CHEMICAL PRINCIPLES

REMI FRANCKOWIAK

UMR 8163 'STL' – CNRS-UNIVERSITES DE LILLE I ET LILLE III

Two variants of Paracelsian chemical principles in the seventeenth-century are generally recognized: Mercury/Sulphur/Salt, also called *Tria Prima*, and the Spirit/Oil/Salt associated with Water and Earth Elements, revealed by Joseph Du Chesne's famous operation of distillation of a piece of wood in his 1587 *Grand Miroir du Monde*.¹ In other words, the two recognized variants of Paracelsian principles of mixed bodies are: on the one hand principles known as first, true or pure, and on the other hand principles known as second or heterogeneous; that is, the former are directly inaccessible since they represent each one a particular nature of the universal Spirit, of a production and conservation power for every thing², and the latter are mixed substances but indecomposable in experiments.³ Even if these principles, first and second ones, were all considered - each one on its category - as real chemical principles, that is, as constitutive substances of mixed bodies whose properties can be reduced to the qualities carried by these principles, in practice and in a general way, the first principles are rather reserved for the preparation of excellent remedies such as the Philosopher's Stone, while the second ones are handled for the preparation of many small remedies clearly much less powerful. So the authors of Chemistry Textbooks in the seventeenth-century quickly exposed, in the part reserved for the chemical theory explanations, the first and true principles Mercury/Sulphur/Salt, to devote themselves then very largely to the handling of the second and tangible principles Spirit/Oil/Salt, more or less easily accessible due to their elemental barks Water and Earth.⁴ However, it appears that several chemical Philosophers – especially French – have given more importance, in their practical application of the Paracelsian doctrine, to a third variant of the Paracelsian principles, also three but this time all saline: Ammonia Salt, Nitre Salt (or Saltpetre) and Alkali, Common or Fixed Salt. These three saline substances, promoted to the rank of principles of mixed

bodies, would have held an intermediate position between inaccessible Mercury/Sulphur/Salt principles and tangible Spirit/Oil/Salt principles; they indeed had the characteristic to be at the same time pure and accessible. These Salts, which could have been individually the subject of some studies in History of early modern Chemistry, seem to have to be actually considered in their relation in triad.⁵ Ammonia Salt/Nitre Salt/Alkali Salt could have been objectively considered as the only principles within the framework of a concrete laboratory labour; these “*Tria Prima Sala*”, if I put it like that, have indeed represented, for chemical philosophers, which are also laboratory men – who have thus vocation to put their doctrine into practice –, an actualization of true principles, presented themselves in this way, in their very purity, to “the eye and by touch”. So the salification of *Tria Prima* seems to show the will of the chemists to physically control the matter and its effects. I would wish to highlight in this paper the existence of this third expression of the Paracelsian principles in the first part of the seventeenth-century, and to expose its use, before putting it back in the broader framework of saline chemical philosophy which was current at the time.⁶

Blaise de Vigenère (1523-1596) is to our knowledge the first chemical philosopher who has salified the three Paracelsian principles.⁷ Besides, he was the author of a *Traitté des Trois Sels* not indexed, undoubtedly lost, and of which it is just made mention in his 1578 *Les Images ou Tableaux de platte peinture*.⁸ In this latter book Vigenère presented among others a calcination operation of some mixed body in order to show the three saline substances which make it up. He described, in his 1618 posthumous *Traicté du Feu & du Sel* another resolution, quite as experimental, of common water into Fixed Salt, Ammonia Salt and a “medium substance” comparable to Saltpetre.⁹ Allen Debus, who merely considered this work in the setting of a traditional alchemical thought without pointing out the originality of this resolution, only noticed the importance of this Saltpetre that would be midway for him between the sea water and fire.¹⁰ In 1586, in his *Traicté des Chiffres*, Vigenère clearly associated Mercury/Sulphur/Salt principles – to which he added Glass in order to, in a cabbalistic thought, find the figure 4 and the square shape – with the four elements Fire/Air/Water/Earth as well as with four Salts: Saltpetre/Ammonia Salt/Alkali Salt/and Common Salt, and with four substances from our elemental world (vulgar Sulphur/quick Silver/lead Marcasite/and Vitriol). In a diagram from the *Traicté des Chiffres*, these substances are gathered in the form of four series, implying a relation and a progression from simple Elements towards mixed bodies of our world here below.¹¹ The

four Salts would then mark an intermediate stage on the way of the materialization of the matter, between imperceptible *Tria Prima* (plus the Glass) and vulgar mixed bodies. Even if these Salts only appear in third and before last place, just before the common substances and just after the Mercury/Sulphur/Salt/Glass principles which are themselves in fact mixed substances made up of the basic Elements and perceived as “elemented Elements”¹², Vigenère, dealing with a tangible reality, took the liberty of writing, both in his *Traicté des Chiffres* and his *Traicté du Feu & du Sel*, that Salt is:

the first origin [...] of all mixed bodies & elemental compounds. That is borne out by the fact that they are resolved into it; because it is like the other life of all things [...].¹³

Salt, whatever its three or four forms, can indeed be regarded as the true principle of mixed bodies, as long as the laboratory work takes place for Vigenère, not in the “intelligible world” of Theology and the Cabbala, nor in the “celestial world” of Astrology and Magic, also treated both of them in his texts, but in the “elemental world” of Physiology and Alchemy; Alchemy being defined as “the art of fire & salt”, revealing “all the most hidden & occult secrets of nature”.¹⁴ Vigenère strongly stressed the importance of the experiment which only, as he wrote, “shows to the finger & the eye the truth of the thing”.¹⁵ And Salt being in fact, for him, the bark of the imperceptible reality of all what is in the world here below, the root of tangible beings, allowing chemical philosophers to practise their art; thus justifying the salification of the Paracelsian *Tria Prima*.

The most fundamental aspect – and yet little known – of Vigenère’s thought is without dispute the assimilation of what he named “Salt” to the universal matter, or at least to the consideration of a Salt as origin of natural things, as a relay between God and the elementary world. In the *Traicté du Feu & du Sel*, which first dealt with theological considerations and then with chemical considerations, the author started from the ‘first mobile’ (God) to arrive to chemists’ mixed bodies, that is, from the inaccessible reality to the sensitive reality. It is as corporeal representation of the divine will that Salt¹⁶ – peel of the elusive reality of everything in the world here below – was allowing the chemical philosophers to practice their art. So the laboratory work was endowed with a transcendent characteristic: while working on the coarse matter, chemists go back up to the first principle of the world.

For Joseph Du Chesne (ca. 1544-1609) also, in his 1603 *De Priscorum philosophorum verae medicinae materia...*, any reality in the tangible

world is salted.¹⁷ Salt is omnipresent, it is the prime matter and the universal Balm. Endowed with excellent properties, it is present in the three kingdoms of nature, and contains in it “the three principles of all things” called by him Fixed Common Salt, Nitre Salt and Ammonia Salt, on top of usual Mercury/Sulphur/Salt:

These three salts will be useful to us, he wrote, as of foundations on which we will place our three hypostatic principles, in our work of the occult nature of things & mysteries of art [...].¹⁸

It will be noted that the salification of Paracelsian *Tria Prima*, is not the only interesting point here since their inclusion in another saline substance, the “Salt of nature”, is as much interesting. In this book, Du Chesne presented the manner of preparing this Salt of nature, universal Balm; it is the occasion, according to his words, to show “almost with the eye” the three distinct natures of the Salt.¹⁹ The laboratory work passed as the surest means of convincing the “obstinate” and “incredulous” persons of his comments on the beautiful mysteries of the saline matter. The preparation of his universal medicine starting from wine must be carried out by the resolution of this mixed body into the second principles Spirit/Oil/Salt/Water/Earth which are then purified, that is, rid of their earthy and aqueous barks by repeated distillations, in order to reveal the three Salt principles; the combination of Ammonia Salt and Fixed Salt produces a “philosophical calx” to which Nitre Salt is to be joined to finish the operation.²⁰ However, when Du Chesne put this preparation in general use to any mixed body, he did not anymore use saline terms in order to bring to this part of the text an absolutely theoretical dimension where only Mercury/Sulphur/Salt principles were quoted.²¹

Differences between the saline conceptions of Vigenère and of Du Chesne exist, but it is not worth pointing them out here. But just like Vigenère, the three Salts principles passed definitely for the real principles to be considered by Du Chesne when he tried to add a more experimental content to the principle theories which he inherited. Salt appeared to him as the most remarkable principle, because it is from this principle that “the others come”, and it is through it that the “admirable & venerable Trinity in unit” is clearly made know in “the lower & natural things”.²² Actually the three Salts do not only represent for Du Chesne the three active principles, but also – without saying more²³ – the three kingdoms of nature, and the three archetypes of all saline bodies and properties of the matter. The Salt, in its various forms (there is also a Hermaphroditic Salt), allowed him to bring a more experimental content to his chemical philosophy. The function of Salt was then that of materializing the prime

and spiritual matter in order to transform it consequently into prime and tangible matter. But the saline materialization is the very perfection, making pass what was just in the state of pure potentiality in act. Salification, the actualization of inaccessible prime matter is, as we saw, complete and concerns each one of its three essences. The Salt here is certainly not the coat in which the Spirit wraps itself since it is one of its three inseparable natures; and consequently the Salt is not something added to the imperceptible Spirit, but the Spirit itself which makes tangible of itself.

The three saline principles can be found in Michael Sendivogius' (1566-1636) texts too. The important role given to Nitre Salt by this chemical philosopher is known, and was analyzed in studies devoted to the concept of nitrous air in the seventeenth-century by several historians;²⁴ but I would be tempted to propose a broader framework for this Nitre Salt, including it in a system of three homogeneous Salts, a little like the doctrine of Du Chesne.

Sendivogius' treatises²⁵ reveal an economy of Salts in a universe where a Central Salt or Unique Salt appears in the form of three Salts cosmographically located: Ammonia Salt, Nitre Salt, and Alkali Salt. Ammonia Salt, presented as a subtle vapour, would be present in the aerial space. The heavier Nitre Salt is linked to the earth but without losing its relation with the skies. Alkali Salt is in the centre of the Earth, it is the most concrete of the three Salts, and the purest part of the calcination residue of a mixed body from which come the most beautiful beings. The universal seed circulates right down to the world here below, in turns through the Ammonia Salt, then the Nitre Salt, and finally the Alkali Salt; Nitre Salt being used as mediator between the two other Salts²⁶. It appears in fact that each of the three Salts reflects a facet of the Central Salt prime matter: Saltpetre is specific to explain the process of generation, whereas the more subtle Ammonia Salt displays the seed in the initial and pre-generator stage of the matter. As for the Alkali Salt, it is the seed in the once generated mixed body. For this reason, this Salt must be extracted in order to prepare the Philosopher's Stone, also called World Salt.

It is true that the Salt actually made selective appearances in Sendivogius' writings, but always at precise moments of the text, to carry out a task related to the transport, the dissemination and the storage of the seminal matter.²⁷ In addition, it seems to be only invoked when Sendivogius wished to give to his speech a more experimental turn, when he wrote about the preparation of the Philosopher's Stone, as if to show that what he theoretically advanced was undoubtedly observed, absolutely

related to the world which surrounds us. When he would get on to the field of the chemical philosophy practice, the intervention of the Salt in the text seems to become essential.

It is exact that Sendivogius promised, at the end of his 1616 *De Sulphure*, the writing of a book on the Salt – his “key & Principle” of his “divine Science”, as he wrote –, but he never did so.²⁸ Nevertheless, an apocryphal book called *Traité du Sel*, which does not seem to have interested enough the historians of Chemistry, was published in Paris in 1669.²⁹ The author of this *Traité du Sel* distorts and salified very strongly Sendivogius’ thought. Thus the text focused more on the couple World Spirit/Salt, with an omnipresent Salt which exists in act – the “Threefold Salt” (*Sel Triple*) directly created by the divine Verb at the very beginning of the world³⁰. This Salt has three natures, corresponding to Paracelsian *Tria Prima*, which are, in the order from the most imperceptible to the most tangible one, or from the highest to the lowest one: the Central Salt, Spermatic Salt, and Salt which is “the last matter of all things”³¹, respectively quite similar to Sendivogius’ Ammonia Salt, Nitre Salt and Alkali Salt. Actually the omnipresent Threefold Salt does not show simultaneously its three natures, but one by one according to its position in the universe. And in practice, it is for the author “the beginning of our philosophical work”³². Here Salt generally allowed the pseudo-Cosmopolitan to touch, initially by the understanding, then by the senses, the secrets of nature otherwise hidden.

More than a Salt which could explain all natural phenomena, the most outstanding and original aspect of the saline vision emerging at the end of the sixteenth-century³³ is the assertion and theoretical development about a Salt being used as an interface between the superior world and the inferior world, playing the part of material frontier between an inaccessible reality and a tangible reality. Salt is in fact presented during the seventeenth-century – I have only outlined its importance in the chemical philosophy of this period³⁴ –, as the organ making chemical philosophers possible to see and touch the matter, in a word, to practise. It is especially for this reason that Salt was invoked in chemical writings, and that it differs from Paracelsus’ Salt and the Salt tradition having preceded, by exceeding the function which had been defined for. In this direction, the salification of *Tria Prima* into Ammonia Salt, Nitre Salt, Fixed Salt by several authors such as Vigenère, Du Chesne, Sendivogius, and the pseudo-Cosmopolitan, may be considered as a real innovation establishing a particular function of the Salt, that to bring closer to the chemist the matter, or rather to make him closer to the theory of the structure of the matter. In the writings of the

authors, because these men belong to the tangible world, the Salt is often in charge to give an account of certain natural phenomena instead of the general World Spirit which is certainly the entity holding the virtues of any thing, but remains out of any direct contact without its saline outfit. Chemical philosophers' Salt, due to its position in the cosmos, collects and materializes the divine and celestial powers in order to transmit to chemists' senses (as well sight, touch, taste, smell as hearing for Bernard Palissy³⁵) the powers of the World Spirit, or of the three natures which characterize it. So the Salt gives an account of everything because it is everything for the chemist; it is the materialization of virtues which would have only been pure potentiality without it; it is what authorizes the chemical philosopher to feel what is insensible. For these reasons, the Salt passes for the prime matter. In addition, it establishes the link between the world beyond and the world here below, and could have been also perceived, to a certain extent, as the representative of God on Earth according to Pierre-Jean Fabre.³⁶

Moreover, before concluding I would like to add that, the notion of Salt allowed solving a contradiction which crossed all Paracelsus' work, that of the not fixed place of the true knowledge, either in the visible world or in the invisible one.³⁷ In his *Paragranum*, we can read that the physician is the person who possesses the knowledge of the invisible, whereas in another place, Paracelsus maintained that truth only comes from the visible. The notion of visible should not probably be understood only for what is perceptible by the senses, but it appears obvious that the introduction of the concept of Salt into chemical philosophies at the end of the sixteenth and in the seventeenth centuries represented an elegant way out of this difficulty since the Salt gathers the both aspects: it is the visible which reveals the invisible all to itself, it is for the practitioner chemist the only tangible means of access to the invisible. Thus, for example, David de Planis Campy wrote in 1633, in his book *L'Ouverture de l'Escolle de Philosophie transmutatoire métallique*:

Yes our prime Matter is a Salt: that is, Salt is the first Body by which it is made palpable & visible [...]. It is the Salt which gives the Form to all things, & nothing can be seen or touched but through the Salt [...]; “[...] this Matter [is] so spiritual, celestial, invisible, & occult that it seems that the senses are deprived of its knowledge, nevertheless thanks to the Art [...] Spirits can be materialized [...]”; thus “[...] the Universal Spirit [is] frozen into Salt (that is, [is] encased in the Salt body which we can see & touch) [...]”.³⁸

Notes

¹ Joseph Du Chesne, *Le Grand Miroir du Monde* (Lyon, 1587); and 1593 for the *Deuxième édition, revue, corrigée et augmentée*. On the distillation leading to the separation of the constituent elements of mixed bodies, see Bernard Joly, “La chimie contre Aristote. La distillation du bois et la doctrine des cinq éléments au XVII^e siècle en France”, in *Alchemy, Chemistry and Pharmacy: Proceedings of the XXth International Congress of History of Science* (Liège, 20-26 July 1997), ed. Michel Bougard (Turnhout: Brepols, *De diversis artibus*. Collection of Studies from the International Academy of the History of Science vol. XVIII, t. 61, N.S. 24, 2002), 67-75.

² For example in Joseph Du Chesne, *Liber de Priscorum philoophorum verae medicinae materia, praeparationis modo, atque in curandis morbis, praestantia* ... (1603); or in Pierre-Jean Fabre, *L'Abregé des Secrets Chymiques. Où l'on void la nature des animaux vegetaux & minéraux entierement découverte: avec les vertus et proprieté des principes qui composent & conservent leur estre* ... (1636), new edition (Paris: Gutenberg Reprint, 1980); or in Nicaise Le Febvre, *Traicté de la chymie* (1660). On the universal spirit in Du Chesne's works, see Hiro Hirai, “Paracelsisme, néoplatonisme et médecine hermétique dans la théorie de la matière de Joseph Du Chesne à travers son *Ad veritatem hermeticae medicinae* (1604)”, in *Archives internationales d'histoire des sciences* 51 (Turnhout: Brepols, 2001), 9-37. More generally on the topic, see Rémi Franckowiak, *Le développement des théories du Sel dans la chimie française de la fin du XVI^e siècle à celle du XVIII^e* (PhD diss., Université de Lille III, 2002), part I, (Turnhout: Brepols, forthcoming in 2011).

³ On the following development, see Rémi Franckowiak, “La chimie du XVII^e siècle : une question de principes”, *Methodos* 8 (2008), Chimie et mécanisme à l'âge classique, on line, <http://methodos.revues.org/document1823.html>.

⁴ For example, Jean Beguin, *Tyrocinium Chymicum* (1610); or Guy de la Brosse, “Traicté general de la Chimie, contenant son ordre & ses parties, montrant qu'elle est science, qu'elle a des Principes & Maximes comme les autres sciences ; & que mettant la main à l'œuvre elle est un Art tres-excellent, enseignant le moyen de connoistre les qualitez, facultez & vertus des Plantes”, in his third book of *De la Nature, vertu, et utilité des Plantes* (Paris, 1628), 289-444. On the chemical textbooks, see Bernard Joly, “El desarrollo de los cursos de química en la Francia del siglo XVII”, in *Construyendo las ciencias químicas y biológicas*, ed. Patricia Aceves, (Mexico: Universidad autonoma metropolitana, 1998), 45-65; and Antonio Clericuzio, “Teaching Chemistry and Chemical Textbooks in France. From Beguin to Lemery”, in *Science & Education* 15 (2006): 335-355.

⁵ Only Norma Emerton has stressed that the three Salts were the “embodiments” of the Paracelsian *Tria Prima* in Joseph Du Chesne's work (*The Scientific Reinterpretation of form* (Ithaca and London: Cornell University Press, 1984), 214). But generally speaking historians have automatically interpreted any allusion in the seventeenth-century to the Salt (different than the Paracelsian Salt principle) as an influence of Sendivogius' nitre salt doctrine without taking into consideration

the existence of a broader saline chemical thought to which this latter belongs, and in which the nitre salt is organically bound to the two others.

⁶ The content of this article is widely developed in my PhD dissertation; see Franckowiak, *Le développement des théories du Sel*.

⁷ To which Vigenère added in fact a fourth – the Glass – that is actually a particular and artificial form of the fixed or common Salt principle; see Franckowiak, *Le développement des théories du Sel*. On the theory of Vigenère's matter, see also Sylvain Matton, "Alchimie, kabbale et mythologie chez Blaise de Vigenère : l'exemple de sa théorie des éléments", in *Cahiers V. L. Saulnier* n°11 "Blaise de Vigenère poète & mythographe au temps de Henri III" (Paris: Presse de l'école normale supérieure, 1994), 111-137; and on his life, see Maurice Sarazin, *Blaise de Vigenère Bourbonnais, Introduction à la vie et à l'œuvre d'un écrivain de la Renaissance* (Charroux en Bourbonnais: Editions des Cahiers Bourbonnais, 1996).

⁸ Blaise de Vigenère, *Les Images, ou Tableaux de platte peinture de Philostrate, ... mis en françois par Blaise de Vigénère, avec des argumens et annotations sur chacun d'iceux, « Perseus »* (Paris, second edition 1597), 475-476.

⁹ Blaise de Vigenère, *Traicté du feu et du sel. Excellent et rare opusculé du sieur Blaise de Vigenère, Bourbonnois, trouvé parmy ses papiers après son décès* (1618), 255-258.

¹⁰ Allen G. Debus, *The French Paracelsians* (Cambridge: Cambridge University Press, 1991), 48. Generally speaking, few historians have really looked into Vigenère's chemical thought (with the exception of S. Matton who specifies ("Alchimie, kabbale et mythologie chez Blaise de Vigenère", 313), to this topic, that Vigenère rather gave for finality to the alchemy the discovery of the matter principles than the confection of the Philosophers' Stone), and therefore have overlooked the importance of the salification of the chemical principles in his writings.

¹¹ Blaise de Vigenère, *Traicté des Chiffres, ou secretes manieres d'escrire* (Paris, 1586), 121v.

¹² "Grands éléments" or "éléments redoublés", or still called "substances élémentaires proches principes des composés" (Vigenère, *Traicté des Chiffres*, 101r).

¹³ "[Le Sel est] la première origine [...] de tous les mixtes & composez élémentaires. Ce qui se vérifie de ce qu'ils se résolvent en luy; si qu'il est comme l'autre vie de toutes choses [...]" (Vigenère, *Traicté du Feu & du Sel*, 242).

¹⁴ Vigenère, *Traicté du Feu & du Sel*, 51.

¹⁵ "[L'expérience] montre au doigt & à l'œil la vérité de la chose" (Vigenère, *Traicté du Feu & du Sel*, 249).

¹⁶ To have an echo in the elementary world, the igneous Verb of God must don a peel discerned by Vigenère as saline; he wrote: "Selon leurs traditions [celles des Kabbalistes], *Nulle chose spirituelle descendant en bas, n'opère sans quelque voile & couverture* [...]" (Vigenère, *Traicté des Chiffres*, 70v). Salt is God's representative on Earth. The materialization of that igneous being must not be received like a real materialization of fire, because the author insisted on the inner

and outer, invisible and visible, igneous and salty nature of the natural bodies, but merely as the clothing of the fire with a garment that leaves it more or less free to act. Fire cannot obviously go without Salt, and even less the opposite.

¹⁷ For a more precise exposition on this topic, see Rémi Franckowiak, “Le Sel de Joseph Du Chesne : premier moteur de la Nature”, in *Actes du Congrès d'Histoire des Sciences et des Techniques de Poitiers de 2004* (Paris: Cahiers d'Histoire et de Philosophie des Sciences, n° hors-série, 2006), 79-92.

¹⁸ “Par quoy en la tres-commune essence de la terre se trouvent souz une mesme nature ces trois sels distincts, desquels sont participans tous tant qu'il y a de vegetaux & d'animaux. Ces trois sels nous serviront comme de fondemens sur lesquels nous colloquerons nos trois principes hypostatiques, en notre œuvre de l'occulte nature des choses & des mysteres de l'art [...]” (in the 1626 french translation : Joseph Du Chesne, *Traicté de la Matière, Préparation et excellente vertu de la Medecine balsamique des Anciens Philosophes. Auquel sont adjoustez deux traitez, l'un des Signatures externes des causes, l'autre des internes & specifiques, conformement à la doctrine & pratique des Hermetiques* (Paris, 1626), 44).

¹⁹ “[Faire] presque voir à l'œil lesdites trois natures distinctes du sel comprises [...] en une seule hypostase” (Du Chesne, *Traicté de la Matière*, 44-45).

²⁰ See Du Chesne, *Traicté de la Matière*, 72-80.

²¹ See Du Chesne, *Traicté de la Matière*, 87-91.

²² “Toutefois si nous considerons la chose exactement nous trouverons que tous les autres proviennent du sel comme d'un principe ferme & constant. La nature duquel nous doit certes faire lever les yeux au Ciel, veu que par là mesme se donne à cognoistre, & reluist clairement és choses inferieures & naturelles, ceste admirable & venerable Trinité en unité” (Du Chesne, *Traicté de la Matière*, 164).

²³ See Franckowiak, “Le Sel de Joseph Du Chesne”.

²⁴ Henry Guerlac, “John Mayow and the aerial nitre. Studies in the Chemistry of John Mayow – I”, in *Actes du septième congrès international d'histoire des sciences* (Jérusalem, 1953), 332-349; and “The Poets' Nitre. Studies in the Chemistry of John Mayow – II”, *Isis* 45 (1954): 243-255; those of Allen G. Debus, “The Aerial Nitre in the 16th and early 17th Centuries”, in *Actes du dixième congrès international d'histoire des sciences Ithaca, 1962* (Paris: Hermann, 1964), t. 2, 835-839, and “The Paracelsian Aerial Nitre”, *Isis* 55 (1964): 43-61; and those of Zbigniew. Szydlo, “The Alchemy of Michael Sendivogius: his Central Nitre Theory”, *Ambix* 40 (1993): 129-146, and “The Influence of Central Nitre Theory of Michael Sendivogius on the Chemical Philosophy of the Seventeenth Century”, *Ambix* 43 (1996): 80-96.

²⁵ Michael Sendivogius, *Tractatus duodecim de lapide philosophorum* (1604); and *Tractatus de Sulphure* (1616). I used the reprint of the 1723 edition containing the three works attributed to Sendivogius: Michael Sendivogius, *Le Cosmopolite ou La Nouvelle Lumière Chymique* (Paris : J.-C. Bailly Editeur), 1992.

²⁶ For example, Sendivogius, *Le Cosmopolite ou La Nouvelle Lumière Chymique*, 63-65.

²⁷ See Franckowiak, *Le développement des théories du Sel*.

²⁸ “[Le] Sel [...] qui est la clef & le Principe de cette divine Science ; c’est lui qui ouvre les portes de la Justice ; c’est lui qui a les clefs pour ouvrir les prisons dans lesquelles le soufre est enfermé, comme je le déclarerai quelque jour plus amplement en écrivant du Sel, dans nôtre troisième Traité des Principes” (Sendivogius, *Le Cosmopolite ou La Nouvelle Lumière Chymique*, 184).

²⁹ Didier Kahn wrote (“*Le Tractatus de sulphure* de Michaël Sendivogius (1616), une alchimie entre philosophie naturelle et mystique”, in *L’Écriture du texte scientifique au Moyen Âge*, ed. Claude Thomasset (Paris: Presses de l’Université de Paris-Sorbonne, 2006), footnote 25) that in 1656, Johann Hartprecht published in Amsterdam, under the pseudonym “Filius Sendivogii J.F.H.S.”, his treatise *Der Verlangete Dritte Anfang Der Mineralischen Dinge / oder vom Philosophischen Saltz* (and in latin in 1658: *Lucerna Salis Philosophorum*). The german, french (*Traité du sel, troisième principe des choses minerales*, 1669) and english versions (*A treatise, or discourse upon salt*, translated from the french version, 1722) were all purely simply united with the following republications of the other treatises of Sendivogius. See Wallace Kirsop, *Clovis Hestean, sieur de Nuysement, et la littérature alchimique en France à la fin du XVIe et au début du XVIIe siècle* (PhD diss., Université de Paris, 1960), and Joachim Telle, “Zum “Filius Sendivogii” Johann Hartprecht”, in *Die Alchemie in der europäischen Kultur- und Wissenschaftsgeschichte*, ed. Christoph Meinel (Wiesbaden: Otto Harrassowitz, 1986), 119-136.

³⁰ Pseudo-Cosmopolite, *Le Cosmopolite ou La Nouvelle Lumière Chymique*, 251.

³¹ “Le premier est un Sel central, que l’esprit du monde engendre sans aucune discontinuation dans le centre des élemens par les influences des Astres, & qui est gouverné par les rayons du Soleil & de la Lune en nôtre Mer philosophique. Le second est un Sel spermatique, qui est le domicile de la semence invisible, & qui, dans une douce chaleur naturelle, par le moyen de la putrefaction donne de soi la forme & la vertu vegetable, afin que cet invisible semence très-volatile, ne soit pas dissipée & ne soit pas entièrement détruite par une excessive chaleur externe, ou par quelque autre contraire & violent accident : car, si cela arrivoit, elle ne seroit plus capable de rien produire. Le troisième Sel est la dernière matière de toutes choses, lequel se trouve en icelles & qui reste encore après leur destruction” (pseudo-Cosmopolite, *Le Cosmopolite ou La Nouvelle Lumière Chymique*, 250-251).

³² Pseudo-Cosmopolite, *Le Cosmopolite ou La Nouvelle Lumière Chymique*, 252.

³³ The importance assigned to Salt is already appeared in Bernard Palissy’s books (*Recepte Veritable* (1563) and *Discours admirables* (1580)). Didier Kahn noticed that for him the presence of a Nature Salt inspiring Joseph Du Chesne in Fanianus’ writings (1560), in “L’interprétation alchimique de la Genèse chez Joseph Du Chesne dans le contexte de ses doctrines alchimiques et cosmologiques”, in *Scientiæ et artes. Die Vermittlung alten und neuen Wissens in Literatur, Kunst und Musik (Wolfenbütteler Arbeiten zur Barockforschung, Bd. 38)*, dir. Barbara Mahlmann-Bauer (Wiesbaden: Harrassowitz, 2004), II, 641-692.

³⁴ Others seventeenth-century chemists who were also Salt Philosophers (without necessarily salified the *Tria Prima*) can be named: Clovis Hestean de Nuysement,

Pierre-Jean Fabre, Samuel Cottureau Du Clos, Guy de la Brosse, Nicaise Le Febvre, ...; see Franckowiak, *Le développement des théories du Sel*.

³⁵ See Bernard Palissy, *Œuvres complètes*, ed. Marie-Madeleine Fragonard (Paris: Editions InterUniversitaires, 1996), t. 2 (*Discours admirables*), 190-191.

³⁶ See Fabre, *Abrégé des Secrets Chymiques*, 155; and also Pierre-Jean Fabre, *L'Alchimiste Chrétien (Alchymista christianus)*, (1632), ed. Frank Greiner (Paris-Milan: SEHA-ARCHE (*Textes et Travaux de Chrysopæia* 7), 2001).

³⁷ As Massimo L. Bianchi pointed it out in “The Visible and the Invisible. From Alchemy to Paracelsus”, in *Alchemy and Chemistry in the 16th and 17th centuries*, ed. P. Rattansi and A. Clericuzio (Dordrecht: Kluwer Academic Publishers, 1994), 17-50.

³⁸ “Ouy nostre première Matiere est un Sel : c’est-à-dire que le Sel est le premier Corps par lequel elle se rend palpable & visible [...]. C’est le Sel qui donne la Forme à toutes choses, & rien ne peut tomber au sens de la veuë ny de l’attouchement que par le Sel [...] » (pp. 121-122); « [...] ceste Matiere [est] tellement spirituelle, celeste, invisible, & occulte qu’il semble que les sens soient privez de sa connoissance, neantmoins par le benefice de l’Art suivant les Esprits se peuvent corporaliser [...] » (foreword, 19th p.); ainsi « [...] l’Esprit Universel [est] congelé en forme de Sel (c’est-à-dire [est] emboité dans le corps du Sel que nous voyons & touchons) [...]” (p. 80) (David de Planis Campy, *L’Ouverture de l’Escolle de Philosophie transmutatoire métallique* (1633) (Paris: Gutenberg Reprints, 1979).

SOME FORGOTTEN FEZ ALCHEMISTS AND THE LOSS OF THE PEÑON DE VÉLEZ DE LA GOMERA IN THE SIXTEENTH CENTURY

JOSÉ RODRÍGUEZ GUERRERO,
INDEPENDENT SCHOLAR

I. Introduction and Geopolitical Landscape

Historically, the greed alchemy generated in political circles has often given rise to complex situations, often at a high cost to its protagonists¹. Prudence, solvency and good administration were not always the goals of some public servants and for these alchemy offered a chance for quick riches. In the present study we are going to study the consequences flirting with alchemy had for Francisco de Villalobos, Deputy Major of the Spanish North African settlement of the Peñon de Vélez de la Gomera.

In order to understand this episode, we must review the political situation of the Maghreb at the beginning of the sixteen century. The zone was marked by conflicts among the governing hafsíes of Ifriqiyya's Kingdom (1228-1534), ' abdalwadides of Tlemcen's Kingdom (1239-1554) and the wattasies of the Kingdom of Fez (1472-1550). Each one looked to the local *ulemas* to support their dynastic claims against their competitors. The result was a fratricidal confrontation that complicated their situation in front of European powers and the Ottoman Turks. Military expenses caused by continuous internal quarrels emptied the coffers and the regional chieftains resorted to corsairs (*corso*) and raids (*razzias*) of the Iberian coast for income. These activities resulted in a progressive blockade of the region's mercantile ports, which brought poverty, economic uncertainty and social dissatisfaction to the region. Some cities of Barbary (Bugía in Ifriqiya, Orán in Tlemcen, Marrakech or Siyilmassa in Fez) took advantage of the resulting political weakness of the ruling elite to act as autonomous centers of power in relation to established courts. Taking advantage of the political instability, both the Spanish and Portuguese considered that it was the suitable moment to

respond to the Berber pirate's harassment and in the process increase their access to Mediterranean shipping routes. In order to achieve it, they got from Pope Alexander the *Bula Ineffabilis* (1495) legalizing the entrance to the Maghreb². The result was the conquest of various key places: Melilla (1497); Agadir and Mazalquivir (1505); Mogador (1506); Safi (1507); Orán (1509); Bugía (1510); Trípoli (1511); Azemmur and Mazagan (1513).

II. The Conquest of the Peñon de Vélez de la Gomera in 1508

Vélez de la Gomera is a calcareous Peñon (crag), 260 meters in length by 100 meters in width and with a height of nearly of 85 meters. It is located along one hundred meters of the Rif's Coast (in modern northern Morocco). A wooden bridge joins it to an adjacent large Peñon called San Antonio. Difficult to reach by land it, it was only accessible by ship³. Baltasar de Collazos described its situation at 16th century:

El Peñón es una fuerça puesta en la ribera del reyno de Vélez de la Gomera, de la costa de Berbería, la qual es más fuerte por el sitio que [la] naturaleza le dio que por el trabajo de los hombres, que es un peñasco ceñido de la mar, porque dista de tierra como ciento y treynta passos y tiene sola una subida a la parte de tierra y está tan áspera y estrecha que dificultosamente puede subir un hombre solo por ella, de manera que con muy poca fuerça de hombres puede resistir a todo el ímpetu del mundo. En sí contiene seys plaças, y estas suben unas más altas que otras. La primera, es una plaça más para servicio de los defensores deste fuerte que para fortaleza d'él, aunque de aquí los turcos procuraron con escopetas offender a los que plantavan nuestra artillería por estar más cerca. Esta da entrada bien difficil a la fuerça principal deste castillo porque se sube por un puente levadiço de catorze pies en largo y se entra por un postigo y una bóveda que no cabe más que una persona. Esta bóveda va a dar a una plaça, la qual tiene a la parte de levante una torre bien ancha y hecha con dos cubos, los quales están en sí abraçados con dos no muy fuertes lienços. Debaxo desta torre está hecha una trinchea que defiende el puerto a los navíos que quisiessen entrar por la parte de levante. A esas plaças señorean otras dos que están al poniente destotras. La una dellas es más alta que la otra y sale a modo de pirámide, porque es un risco redondo y ancho y viene a fenescer en muy angosto porque la plaça que en sí tiene, no tiene más anchura que doze pies en quadra. Aquí quedó puesta una cruz que paresce muy bien. La otra plaça está un poco más baxo que esta y es más ancha; esta defiende la entrada del puerto por la banda de poniente. Toda esta peña, por la banda de la mar, es una muralla hecha por la naturaleza, de peña tajada y de altura de más de cien estados, aunque por la banda de

tierra no es tan alta, y terná de circuito toda ella como tres mil passos. Echa de sí un braço a la parte de levante a manera de muelle, en el qual no hay fuerça alguna, pero sirve de abrigo. De todas estas fuerças fueron las dos primeras batidas con seys cañones gruesos y recibieron tanto daño en el muro, por ser flaco, que se tenía esperança que al segundo día serían del todo arrasadas de nuestra artillería, aunque después de arrasadas fuera tan difícil el assalto que costara vida de muchos soldados.⁴

The historical importance of the Peñon de Vélez de la Gomera was due to its privileged emplacement on the mouth of the in Bades River. After the Portuguese conquest of Ceuta in 1415, the Peñon became a vital refuge for Berber corsairs, from where they organized numerous incursions in the south of the Iberian Peninsula. The constant incursions motivated the Catholic King, Ferdinand I to order Pedro Navarro to attack the enclave. A squad of ships destined for the conquest of Oran were instead sent to the Peñon. The operation proved to be surprisingly simple; the large number of chartered ships made the corsairs on the Peñon think that the real objective of Spanish squad was the close city of Vélez (with 6,000 inhabitants then, and today abandoned). The Peñon was occupied on July 23, 1508. Immediately, the site was fortified with a large number of Spanish forces and with artillery pointing to Vélez. Pedro Navarro established a garrison under the command of Juan de Villalobos that would end up in command of his brother Francisco.

The strategic importance of the site was such that Spain did not wish to break the Treaty of Tordesillas (1494)⁵ by its unlawful occupation, since the Treaty placed it within territories granted to the Portuguese. As a result of Portuguese protests, the Treaty of Sintra was signed in 1509, legalizing the action in exchange for a guarantee that the Spanish would renounce any claim to the Atlantic coast of Africa⁶.

The king of Fez, Muhammad al-Burtughali (k. 1505-1524) was certainly on the losing side. He saw the ability of his corsairs greatly diminished, lost the control of the mouth of the Bades River, and had to put up with the city of Vélez submission to the harassment of Spanish artillery. If that were not enough, the Peñon was used as an escape route for Christian prisoners, as Collazos tells:

...Francisco de Villalobos tenía particular amistad con tres moros de Fez, los quales le trayan christianos cautivos que hurtavan ellos en Fez, y venían con ellos al Cantil y con cierta seña que hazían al Peñón embiávales la barca en que los metía allá. Y el alcayde, porque los moros no fuessen vistos ni conocidos de los soldados, metíalos en el Peñón cubiertos y teníalos dentro un día hasta echarlos a la noche. Y desta manera vinieron

muchas vezes y traxeron muchos christianos, a los quales el alcaide embiava libres a España.⁷

No able to mount an effective military operation against the Spanish, the African monarch chose a different strategy, one that had as its main protagonists a character taken from the one of the more fascinating arts of the Kingdom of Fez. I refer, of course, to alchemy.

III. Fez's Alchemists in the 16th Century

A fondness for alchemy was not something easily forgotten in the Fez region, and still less in its capital. Even as late as the middle of the 19th century, alauit sultan Moulay al-Hassan (1836-1894) maintained in one of his mosques a group of twenty seven calligraphers entrusted with copying alchemical manuscripts kept in other large Islamic libraries. He compiled hundreds of codices in a room built into the *bou-touil* side of Dar el-Mākhzen Palace.⁸ He also had installed in his laboratory beginning in 1887 the alchemical practise of Sidi Muḥammad Mezoūr and Makhloūf Amsellem. Amsellem was a Jew that came from Algeria, who stayed many years at Fez with his disciple Aḥmad ibn al-Madini. The journal *Archives Marocaines* published two small articles by them, where they discussed their views on alchemy⁹. After working for Moulay al-Hassan, Amsellem tried to convince Moulay' successor, Moulay Abd al-Aziz (1878-1943), of the importance of his work, as well as to higher French authority at the region, Louis Hubert Lyautey (1854-1934), but he fell into disgrace. Apparently, he spent all that he was in his alchemical practises, and he ended up broke and on the breadline¹⁰. He lived humbly as a quack doctor and salesman of alchemical remedies. Finally, he went to Jerusalem, where he published a modest collection of short essays titled *Tapouhé zahav bemichkélot késséf* (*Gold Apples in the silver balance silver*).¹¹ For his part, Aḥmad ibn Muḥammad al-Madini, published and account of the curious ideas (mixture of alchemy, magic and occultism) these men professed at the beginnings of 20th century.¹² Al-Madini, from the Saudi city of Medina, had travelled through several countries before establishing his laboratory in Fez's *mellah* (Jewish neighbourhood).

In recent times, historian Eric John Holmyard (1891-1959) would study the survival of these alchemical practices at *el-Bali's* labyrinthic neighbourhoods (the ancient part of the city, or *medina*):

There are, indeed, still industrious –and sometimes learned– alchemists in Islam. One of them, Al-Hajj Abdul-Muhyi Arab, who died only a few years ago, was a personal friend of the author's and often engaged him in

discussions concerning Jabir, Khalid, and other Arabic authorities [...] One of his last acts was to write a letter of introduction to an alchemist friend at Fez, the outcome of which was to give the autor the privilege of being taken to see a subterranean alchemical laboratory in the old part of that city.¹³

However, what concerns us now is the general situation of alchemical practices in the region during Early Modern Age¹⁴. European commentators noted the relationship between the Maghreb kingdoms and alchemy. Michael Maier (1569-1622) mentioned in England rumours connecting the appearing of the Rosicrucian Brotherhood with a Moroccan King-Prophet enthroned with the help of some hidden arts. Although these rumours were not based on fact, it is curious that, at the popular level, an alchemical explanation associated with a North-African ruler was linked to this secret brotherhood.¹⁵

These kinds of myths were not only European. The Alaouit chronicler al-Ifrani (c. 1669/1670-1745?) picked up in his work *Nuzhat al-hadi* some oral traditions attributing to the *Ars Transmutatoria* the money used for the reconstruction of the Ibn Yousouf mosque in Marrakech, done in year 972 H (c. 1564-65).¹⁶ The underwriter of the luxurious enlargement of the religious complex was Abdallāh Al-Ghalib (1527-1574), sultan of the Sa'adī dynasty, ruler from 1557, and who transferred the main city of his kingdom from Marrakech to Fez.¹⁷ Al-Ifrani's story also implicated Ahmad ibn Moussa ibn Muhammad, one of more Maghreb eminent *ulemas*, whose mortal remains are venerated at al-Ateuf (Algeria):

Una tradición popular muy extendida asegura que el sultán Mulay `Abdallāh hizo ejecutar todos estos trabajos [en la mezquita Ibn Yousouf] con la ayuda de los recursos que le procuró la alquimia, ciencia que le habría sido enseñada por el virtuoso sabio Abū `Abbās Aḥmad ibn Moussa, del que ciertamente habría sido discípulo como ya se ha dicho más arriba. Pero esto es un error absoluto que tiene su origen en una ignorancia completa de las cosas. En efecto, se sabe que el sabio Sidi Aḥmad ibn Moussa, al recibir la visita de un hombre que vino a solicitarle lecciones de alquimia, le contesto como sigue: «Las letras de la palabra alquimia son cinco, número que es igual al de los dedos de una mano; así pues, amigo, si deseas practicar una ciencia semejante dedícate al laboreo y a la agricultura. He aquí la verdadera alquimia de los hombres y no aquella que emplea el plomo y el cobre». Cabe añadir que este sabio fue un gran santo y no era el tipo de hombre que abriría a un musulmán una de las grandes puertas que dan acceso a las tribulaciones, ni a sugerirle uno de los más grandes riesgos para echarse a perder. Sabemos, en efecto, que la ciencia de la alquimia es uno de los más importantes motivos de problemas y que el sabio tenía la costumbre de citar los versos siguientes a sus visitantes :

«Buscad en todo el justo medio. Ésta es la salvación. No cabalgues sobre un animal demasiado manso ni sobre una bestia demasiado violenta». Todos los santos personajes han sido unánimes al poner en guardia a los hombres contra el estudio y la práctica de la alquimia. Los siguientes motivos sostienen su renuncia.

1º) La alquimia es una ciencia quimérica, tal y como ha remarcado Avicena, que tomó a modo de prueba las palabras del Corán: «No obrarás alteración alguna en lo creado por Allah»¹⁸. Por esta razón ningún ser creado tiene la capacidad de transmutar un mono en hombre, o un chacal en gacela; ni puede tener el poder de mudar el plomo en oro o el cobre en plata. En una discusión que tuvo lugar a propósito de la alquimia entre dos personas, una de ellas, defensora de esta práctica, dijo a la otra: «¿Negará usted lo que sucede ante sus ojos con las tinturas?. Un objeto rojo puede tornar amarillo, o uno azul cambiar a negro». El adversario respondió: «Yo no discuto tal propiedad de las tinturas, sin embargo debe usted considerar que no operan cambios en la naturaleza misma de los cuerpos. Lo que yo rechazo es que un vestido de lana blanca pueda transformarse, por la acción de una tintura, en algodón verde o seda roja. Todos sabemos que por medio de una tintura el cobre se blanquea, pero no cambia en nada su naturaleza intrínseca y no pierde su nombre de cobre. Así, lo que usted debe decir es cobre blanqueado, y nunca plata; igual que cuando tiñe la lana no pierde su nombre de lana».

2º) Aunque la posibilidad de transmutar existiese, nadie podría llevarlo a la práctica: Tal es la opinión de Abū al-Faraj ibn al-Jawzī¹⁹. Según este autor hay tres cosas cuya existencia debe admitirse y, sin embargo, ningún habitante de Oriente u Occidente las ha visto jamás. Estas tres cosas son: la alquimia, el ghul y el anqa²⁰. Todo lo que sabemos de ellos reposa sobre ciertos relatos o tradiciones. Las historias que se han dedicado a estos temas son como las fábulas, como las representaciones inanimadas, o como las imágenes de seres ficticios.

3º) En fin, aun suponiendo que la alquimia existiera, o que pudiera ser puesta en práctica, sería ilícito utilizarla y sacar provecho de ella: Cuando preguntaron a Abū Ishāq al-Tūnisi²¹ sobre si era justo hacer uso de una sustancia así obtenida, con la condición de que fuera pura, él respondió: «Si operando sobre la plata o cualquier otra materia llegas a obtener oro puro, no hay duda de que estás autorizado a emplearlo. No obstante, si lo vendes sin decir al comprador que se trata de plata u otra materia convertida en oro, habrá un fraude evidente. Si por el contrario le dices lo que es, ninguna persona lo comprará, y te dirán: Quién me asegura que, por otros procedimientos, no das origen a metales entrando en la categoría de aquellos a los que el Profeta a dicho: El que nos engaña en una mercancía no es de los nuestros, pues ha cometido sacrilegio».

Ibn 'Abd'l-Barr²² refiere las siguientes palabras del juez Abū Yūsuf: «Buscar la religión únicamente en las palabras es ser herético; demandar la fortuna a la piedra filosofal es querer la miseria». Abū Muḥammad Sālih²³ decía también: «Hay tres cosas que debes evitar pues acarrear otras tantas

consecuencias negativas. No bebas jarabes o terminarás tomando licores; abandona la búsqueda de la piedra filosofal o te conducirá a la sofisticación y al fraude; en fin, evita el trato con mujeres maduras o acabarás frecuentando a muchas jóvenes». En una ocasión le preguntaron a cierta persona eminente: «¿Por qué nunca habla de este arte? Sería un recreo para el espíritu». A lo que el hombre respondió: «Ni un asno lo estudiaría, para no tener que mover su quijada inútilmente». Después terminó diciendo: «Siempre comento a mis compañeros que ella [alchemy] es como el sol que nos toca con su luz, pero está bien lejos de nosotros».

Given the material above, we can now center our attention in the region of Fez during the first quarter of 16th century. It was then, as we will see later on, that Vélez was lost due to the lure of alchemical gold. The historical context of alchemy and Fez had not received the attention of scholars and it is worth noting at this time. Our best data is provided by a traveller from Granada, al-Ḥassan ibn Muḥammad al-Wazzan (1494- ca.1532 d. C), known in Europe as John Leo Africanus²⁴. He provides us of first-hand news. He lived in Fez from the age of four. There he attended both to the Koranic school and to one belonging to a *madrassas*, where he achieved *faqih's* title (doctor in laws) when still he was in his teens. Also, according to his comments, he had an alchemist among his relatives who had been exiled to the walled-city of al-Yadida due to the debts he contracted looking for the elixir²⁵. Thus, Leo Africanus was familiar with the way of life of local alchemists which he described in his *Cosmographia* (1526). The portrait he paints is far from a romantic idealization. He does not deny the possibility of manufacturing gold by artificial procedures, nor whether this practice could have been done by learned persons in the past. But he observes that the many alchemical practitioners living, or working, in Fez had little in common with them. He described them as men of rude spirit, troublemakers and free riders without any academic formation. People recognized them without difficulty because they went about impregnated of sulphur's typical repugnant stench²⁶. An interesting characteristic is the fact is that they congregated at the biggest mosque in the city. There they discussed, book in hand, the theories of more reputable authors²⁷. Three writers were most often mentioned in these open forums²⁸:

1) Yābir Ibn Hayyān (721-815 d. C), most famous figure to which hundreds of treatises are attributed²⁹.

2) Mu'ayyad ad-Dīn al-Tughrā'i (1061-1121 d. C.), poet, astronomer and *khatib* of Malik Shah, sultan of Bagdad³⁰. His life was glossed by Leo Africanus himself, in *De viris quibusdam illustribus apud Arabs*

3) An alchemist named Ibn al-Muġayribī (perhaps from Granada), who was introduced to alchemy by a mameluk from Damascus.³²

Local alchemists, far from forming a homogeneous set, were divided into two groups with well-differentiated methods. The first group was composed of seekers of certain elixirs (ar. *al-iksīr*: Subtle dust) that once incorporated into a vile metal, would allow them to be able to transmute such metal in gold or silver.³³ The other group was focused on the multiplication or increasing of a noble metal by aggregation of other mineral substances. These practitioners were numerous, many were swindlers dedicated to forging coins. In fact one Moor from Fez, a Spaniards' prisoner, was granted freedom in 1576 in exchange for turning into silver a certain unspecified metallic alloy.³⁴ The *modus operandi* of these gold makers is described in the contemporaneous literature. In general, the procedures used were based on operations for the benefit of metals, like lixiviation or repeated cementations. The Catholic Saint Vincent de Paul (1580-1660) gave account of the popularity of such procedures at Maghreb, when he described the work of one of the masters he had after being sold as a slave in Tunisia:

Fui vendido a un pescador, quien pronto se vio obligado a deshacerse de mí, pues nada me era tan adverso como la mar. Después del pescador pasé a ser propiedad de un anciano, médico espagírico, soberano déspota de quintaesencias, hombre muy humano y tratable que, por lo que me dijo, había trabajado cincuenta años en busca de la piedra filosofal, y aunque su esfuerzo resultó vano en cuanto a la piedra en sí, logró, con toda seguridad, otras formas de transmutación de metales. Y para dar fe de ello, declaro que a menudo lo vi fundir tanto oro como plata juntos, colocarlos en laminillas, poner luego un lecho de algún polvo, luego otro de láminas y después otro de polvo en un crisol o recipiente de fundir de los orfebres, mantenerlo al fuego veinticuatro horas y, por fin, abrirlo y hallar la plata convertida en oro. Y, más a menudo todavía, vi congelar o fijar el azogue en plata fina que vendía para hacer limosnas a los pobres. Mi ocupación consistía en mantener el fuego en diez o doce hornos lo que, gracias a Dios, no me producía más pena que placer. Mi dueño me apreciaba mucho, y se complacía en gran manera hablándome de la alquimia y, más aún, de su ley, a la que se esforzaba por atraerme prometiéndome mucha riqueza y todo su saber...³⁵

IV. Alchemy in the Loss of the Peñon

Many men were dazzled by promises of gold mountains that were heard from the mouth of astute Rif alchemists. Among the ones that

heeded these stories and paid dearly for it was Francisco de Villalobos, responsible of Vélez de la Gomera's strategic Peñón. The story of the tragic event was told by Juan Antonio de la Estrada, a citizen of Melilla. Here follows the complete text, with subsequent commentary:

Se mantuvo después [Vélez Rock] catorce años, hasta el de 1522, á 20 de Diciembre, que muriendo el mencionado Almanzor, el Rey de Féz dió la ciudad de Vélez á un primo suyo, llamado Muley Mahomet, el qual viendo las molestias que padecían con la artillería del Peñón si no les llevaban los bastimentos que pedían, estando en tal trabajo, buscó quantos modos le fueron posible é imaginables para libertarse de tantas irrupciones, y conociendo que por las armas sería dificultoso, se echó a la negociación, valiéndose de dos Moros, famosos Alchymistas de Féz: estos fueron con disimulo á Villalobos (que era tocado de la codicia) y le propusieron sería en pocos días muy rico, porque ellos harían en la Alchymia plata tan perfecta que la pasaría entre los moradores de toda aquella tierra. Tratando esto con todo secreto, hicieron el ensayo delante de él, quien se holgó mucho, y teniéndolos en su casa, labraron con el mayor sigilo en pocos días mucha cantidad que introducían los dos Moros en Vélez, dando cuenta de todo al señor de Vélez de la Gomera, que lo había mandado, y tomaba toda la moneda. Sabiendo estos con la frecuencia que tenían, que cierto soldado quería mal á Villalobos, y dando parte á Muley Mahomet, les ofreció muchas mercedes y socorrerlos con toda su gente. El día señalado, estando Villalobos echado de pechos sobre las almenas del Castillo, llegó uno de los Moros y lo abrazó por detrás, y el otro sacándole un puñal de la cinta, le mató con él. Mientras los moros hacían su hecho, estuvo el referido soldado á la puerta baxa del castillo entreteniéndolo con pláticas a los de la guardia, y baxando los dos Moros, acometieron los tres combinados con los pocos Christianos que allí estaban, les encerraron y se apoderaron de la torre, donde estaban las municiones y artillería que había dentro, y haciéndolo señal a los de Vélez, acudieron estos con gran priesa y se apoderaron del Peñón sin que los fieles pudiesen remediarlo, por tenerles ganada la principa fortaleza. Entraron dentro los Moros y fueron muertos los Christianos, sin quedar uno de los de la guarnición...³⁶

Juan Antonio de Estrada's version, although well-known, must be approached cautiously. It is not the only known version of this account. In his version, Estévez Calderón of Málaga substituted two beautiful Muslim women for the alchemists who supposedly killed the Major, and instead giving access to the citadel to Berber soldiers.³⁷ Moreover, the date of 1522 provided by Estrada is impossible, since a contemporary of the facts, Leon Africanus, listened to the story of the Peñón's fall in great detail from "*those same that they were present ...*".³⁸ The events could only take place before 1517, because Leon left Fez in diplomatic mission

at the beginning of that year. In spring he was at the Egyptian city of Rash (Rosetta).³⁹ After, he visited Constantinople and he was captured by Christians during his return trip, in June 1518⁴⁰. After staying imprisoned in Rhodes, the headquarters of the Caballeros de San Juan, he was recognized as a learned man, a man of outstanding culture, and thus transferred to Rome. There he met Pope Leo X (1513-1521), and he was confined at Saint Angelo castle, from where he collaborated with Vatican librarians.⁴¹ We know he did not keep in touch with other Moslems during his years as a prisoner, because a condition to the lenient terms of his captivity was that he become a Christian, as he did the January 6, 1520.⁴² He remained in Italy for several decades after that.

Doubts about the dating and the main characters of the event, are clarified in another text also written in 16th century by Baltasar Collazos.

El rey de Fez, Muley Mafumet, viendo que cada día faltavan christianos [en sus cárceles] y que los moros vezinos de Fez se le quexavan dello, hizo muy gran pesquisa hasta saber quién hazía los hurtos de los cautivos y alcançó a saber que eran estos tres moros, y prendió al uno dellos, el qual confessó lo que passava. Y queriendo hazer justicia d'él, los otros dos acordaron hablar al rey y dixéronle que era verdad que ellos havian hecho menos todos los christianos que en Fez havían faltado, pero que lo hazían con intento de le hazer un gran servicio a él y a Mahoma. Y el rey les preguntó que de qué manera, a lo qual respondieron cómo el alcaide del Peñón tenía gran confiança dellos y la manera qué tenían en entrar y salir, y cómo los metía en la torre adonde estavan todas las municiones del artillería y escopetas y ballestas de los soldados, las quales el alcaide havia encerrado allí por cierta passión que con los soldados havian tenido, y por no estar muy seguro dellos les quitó las armas, y ellas y pólvora y municiones metió en la torre, que era toda la fuerça que el Peñón entonces tenía. Y estos dos moros pidieron licencia al rey para poder tomar otro christiano y llevarlo al Peñón para mejor tornar a mirar cómo harían lo que tenían pensado. E hizolo el rey assí, pero no soltó al que tenía preso. Y todo esto con mucho secreto. Y dos los dos moros con el christiano a Vélez entraron en el Peñón por la orden que antes, y consideraron y miraron muy bien todo lo que les convenia hazer para salir con su propósito. Y dixéronle al alcaide si quería comprarles una negra muy bien dispuesta y moça, que sabía hazer oro de alquimia. Y alabáronselo tanto que a él le dio gran cobdicia de verla y tanta que les rogó muy mucho que en todas maneras se la traxessen. Y con esto se fueron. Bueltos a Fez, contaron al rey lo que passava y que era menester que les diesse un negro muy valiente y bien dispuesto que él tenía y que embiasse un alcaide con dozientos moros escogidos que fuesse con ellos. Todo lo qual les dio el rey. Venidos estos dos moros con el negro en hábito de negra, dexando al alcaide con los

dozientos moros en parte que llegassen a cierta hora, porque entonces entendían tener hecho lo que llevaban pensado, llegaron al Cantil y haziendo su acostumbrada seña, fueles del Alcayde del Peñón embiada la barca. Y metidos en la torre, adonde no estaban más aquellos y él, su muger y una moça, el alcayde viendo la negra, se holgó mucho con ella. Y haviendo estado un buen rato hablando en el orden que se tenía de hazer el oro de alquimia, viendo los moros que era tiempo y que el alcayde con los dozientos moros habría ya llegado al Cantil, echó mano el negro a una gumia, que es una arma como hoz, que traya encubiertamente, y dio con ella una gran cuchillada a la muger del alcayde. Y uno de los moros, con una mano de almírez de moler pólvora, dio al alcayde un porrazo en la frente que dio con él en el suelo. E hizieron de suerte que quando al ruydo acudieron los soldados ya ellos havian muerto al alcayde y herido a la muger y cerrado la puerta de la torre y héchose señores della, y hecha seña para que el alcayde con dozientos moros acudiesen. Los quales acudieron y juntamente con ellos el rey de Vélez y se apoderaron del Peñón y cautivaron a los soldados. El rey de Vélez tuvo tan buena maña que embió a Fez al alcayde con los dozientos moros, diziéndoles que llevassen la presa de los christianos a Fez y que él ternía el Peñón por el rey de Fez como su vassallo y sobrino, aunque después no quiso sino tenerle por sí. Y el rey de Fez cortó la cabeça al alcayde porque havia sido nescio. Passó esto el año de mil y quinientos y diez y seys, de suerte que estuvo en poder de los christianos ocho años.⁴³

Collazos' story is in concert with chronological data, and explains the discrepancy about the genre and occupation of the decoy. It seems that the perpetrator was "a black woman, very well disposed and young, who knew how to make alchemical gold". Yet, Collazo's story is not totally without bias. He is clearly siding with the Spanish, and thus avoids mention of the soldier's who betrayed the garrison by informing the attackers about vital outbuildings where all munitions were hidden, an action cited by Estrada and Leo Africanus.⁴⁴

V. The Loss of Vélez's Peñon and its consequences

Francisco Villalobos's alchemical ambitions turned out to have significant consequences for the history of sixteenth-century Spain. Within the years, there were two failed attempts at recapturing the Peñon by Fleet Generals Juan de Velasco and Pedro Mazcarenas⁴⁵. Muḥammad al-Burtughali also quickly turned the capture of the Peñon to his advantage, "... *doing from it as much damage as he could at all Andalucía's coast* ..." ⁴⁶ In 1518, the city of Motril saw a contingency of five hundred of corsairs ships off its shores supplied from Vélez. Leaders in the terrorized region set up observations posts along the coast to give the alarm in case enemy sails

came in to view.⁴⁷ It was no deterrent. In 1524: "...*Certain raiding ships of the Moors came to Motril's beach, ... a lot of people jumped down, and attacked the village with swords ...*"⁴⁸ Diego Hurtado de Mendoza, Field Marshal of the Kingdom of Granada and Marquis of Mondéjar, commissioned a new the mission to renew the attack on the Peñon to Fleet General Rodrigo of Portu[o]ndo in 1525. He was provided with detailed diagrams, fifteen hundred soldiers and tented ships to avoid the enemy defences, but he failed.⁴⁹ After a third setback in 1563 led by Sancho Leiva, Philip II had to organize a formidable mission. He assembled ninety three war ships and sixty small ships chartered from Spain, the Pope, the Doria Family, Malta and Tuscany and a contingent of six thousand Spanish, two thousand German and twenty-two hundred Italian soldiers. The fleet was headed by García de Toledo, Viceroy of Sicily and Álvaro de Bazán (1506-1588), Marquis of Santa Cruz. Only then was the Peñon finally back under Spanish control. We can safely say that never has an alchemist's fraud cost the Spanish crown so much.

Notes

¹ Hugh Trevor-Roper, "Paracelsianism Made Political, 1600-1650", in Ole P. Grell, ed., *Paracelsus: The Man and his Reputation, his Ideas and their Transformation*, (Leyde: Brill Academic Publishers, 1998), 119-33. Didier Kahn, "Paracelsisme, alchimie et diplomatie dans le contexte de la Paix de Westphalie" in Charles Mouchet and C. Nativel eds., *République des letters, République des Arts. Mélanges en l'honneur de Marc Fumareli* (Gèneve: Droz, 2008), 103-121.

² Simancas, Archivo General de Simancas (hereafter A.G.S.), *Patronato Real*, leg. 60, f. 195r.

³ The Peñon is accessible to pedestrians since the last century, when a landslide made it possible.

⁴ Baltasar Collazos, *Commentarios de la fundación y conquistas y toma del Peñon y de lo acaescido a los capitanes de su Magestad desde el año de 1562 hasta el de [15]64. hechos por Balthasar de Collaços y dirigidos al ilustrissimo señor don Antonio de Toledo, prior de sant Joan y cavallerizo mayor de su Magestad y de su consejo de estado y guerra* (Valencia: 1566, Joan Mey), 29r-30v.

⁵ Antonio Rumeu, *El Tratado de Tordesillas* (Madrid: Editorial Mapfre, 1922), 181-206.

⁶ Seville, Archivo General de Indias, *Patronato*, leg. 50, fol. 36. See also: Madrid, Biblioteca Nacional de España, Ms. 6149, (s. XVI), ff. 137-140: "*Capitulaciones de los reyes de España y Portugal sobre la conquista del reino de Fez. Año 1509*".

⁷ Baltasar Collazos, *Commentarios...*, 34v.

⁸ Guillaume Salmon, "Notes sur l'alchimie à Fès," *Archives marocaines* 7 (1906): 451-62.

⁹ Edouard Michaux-Bellaire ed., “Traduction d'une note en arabe su l'alchimie”, *Archives marocaines* 11 (1907): 480-8.

¹⁰ *Ibid.*, 480: “Mokhlouf Amsellem est un alchimiste convaincu, il croit en toute sincérité être le denier et el seul possesseur du secret de l'èlixir. La preuve incontestable de sa bonne foi se trouve dans ce fait qu'il a dissipé à ses recherches tout ce qu'il possédait et tout ce qu'il tenait de la générosité de Moulay El Hasan, et il déplore que ses ressources ne lui permettent pas de continuer ses travaux; il est en effet très pauvre et vit misérablement”.

¹¹ Gershom Scholem, *Alchemy and Kabbalah* (Putnam: Spring Publications, 2006), 53: “In Jerusalem, at the end of 1924, I made the acquaintance of an octogenarian Moroccan scholar, Makhluf Amsellem, who was a Kabbalist, as well as a theoretical and practical alchemist. Amsellem showed me two large codices that he had compiled, one on Kabbalah, the other on alchemy. He told me that in his youth he had been the court alchemist for the sharif of Morocco”. On his life and works: Paul B. Fenton, (1993), “Rabbī Makhlūf Amṣallēm, Maroc cabalist and alchemist,” *Pe'amin: Studies in the Cultural Heritage of Oriental Jewry* 55 (1993): 92-123 [hebrew text]. Robert Assaraf, *Une certaine histoire des juifs du Maroc* (Paris: Jean-Claude Gawsewitch Éditeur, 2005), 279-280.

¹² Michaux-Bellaire ed., “Traduction d'une note en arabe sur l'alchimie,” *Archives marocaines* 11 (1907): 480-488.

¹³ Eric J. Holmyard, *Alchemy* (New York: Dover Publications, 1990), 104. *Ibidem*, “Alchemy in Morocco”, *Aryan Path*, 5(7) (1934): 455-8.

¹⁴ Marcellin Berthelot et al., *La Chimie au Moyen Âge. Tome III. L'Alchimie Arabe* (Paris: Imprimerie Nationale, 1893). Fuat Sezgin, *Geschichte des arabischen Schrifttums* (Leiden: Brill Academic Publishers, 1971), t. IV, 1-300. Manfred Ullmann, *Die Natur- und Geheimwissenschaften im Islam* (Leiden: Brill Academic Publishers, 1972). Ingolf Vereno, *Studien zum ältesten alchemistischen Schrifttum. Auf der Grundlage zweier erstmals edierter arabischer Hermetica* (Berlin: Klaus Schwarz Verlag, 1992).

¹⁵ Michael Maier, (1617), *Symbola aureae mensae duodecim nationum* (Frankfurt: Typis Antonij Hummij, impensis Lucae Iennis, 1617), 290: “Fama de Fr. R. C. ad exteros transiit. FAMAILLA dictae FRATERNITATIS, quae hic in plurimorum auribus oreque iampridem persterpuit, adque exteras oras circum circa vagata latissimas regioes pervolavit, mihi quoque tum in Anglia agenti, reique Chymicae unice invigilanti, obscuris quibusdam rumusculis, incredibilibus, ipsaque veritate longe maioribus insonuit, cui fidem, pro referentis fide, dubiam prima vice adhibui: A. C. 1613 Barbaria propheticus aut certe magicus rex multa admiranda fecit. Eodem tempore ex Barbaria innovationes quaedam mirabiles ore referebatur, quomodo prope Marocum et Fesam quidam propheta ex sapientum numero surrexerit, nomine Mullei Om Hamet Ben Abdela, qui plurima occulta signa in se demonstrans, Regem istius regionis, Mullei Sidan, satis magno exercitu instructum, pene inermis, exigua man agressus profligavit et vicit, regnique sedem abtenuit. Prima relatio incerto, cum vero et hi fratres fama inconstanti ex Barbaria venisse per Hispania dicerentur, eiusdem artis et institutionis hi et ille Barbaricus propheta, existimati sunt: Francf. Mundi autumnal: A. 1616. Sed libro ipso de

fama et confessione eorum edito, forte fortuna perlustrato, longe aliter de illis ferre iudicium informatum sum". For Michael Maier's evolution on his view on Rosicrucian movement, see: Hereward Tilton, (2002), "Regni Christi Frater : Count Michael Maier and the Fraternity R. C.", en: *Aries*, 2 (2002): 3-33.

¹⁶ Muḥammad al-Saghir ibn al-hajj Muḥammad ibn 'Abd Allāh al-Ifrani was educated in the city of Fez. He worked at court where he wrote a series of biographies of prominent men of his time and the history of the Sa'adiana dynasty. His knowledge of the history of the madrasa Ibn Yousouf en Marrakesh has merit since he became its imān and *khatib* (secretary).

¹⁷ Al-Ghalib was praised for having lessened the confrontations between the different parts of his reign with the support of the influential *tariqah* Jazuliyya. He gave this group important rights in exchange for the collaboration between its respected *sufies* leaders and other religious centers or *zawiyas*. In recognition the *tariqah* gave him the rank of spiritual authority among his followers. Vincent J. Cornell, *Realm of the Saint. Power and Authority in Moroccan Sufism* (Austin: University of Texas Press, 1998).

¹⁸ *Corān*; sura 30, v. 30.

¹⁹ The writer and jurist al-Jawzī (1114-1201 d. C) was one of the principal teachers at the Hanbali school in Bagdad during the twelfth century. For a recent biography see, Al-Jawzi, *The Attributes of God* (Bristol: Amal Press, 2006).

²⁰ *Ghul* and *'anqa* are two elements of ancient Arab folklore. The first relates to a spirit that had a vaporous figure and was capable of taking on the shape of a human or animal. The second refers to a *Simurg*, a legendary bird of huge size that could live for mileniums. *Corān*; 51:56; 72:1; 114:5.

²¹ Abū al-'Abbās ibn Ishāq al-Tamīmī a-Tūnisī (ca.1193-1222) was a Tunesian astronomer, author of a large astronomical treatise or *zīj*. According to Ibn Khaldūn (1332-1406 d. C) the work was based on his own observations and the help of a Jewish astronomer that worked for Sicily (1153-1189). Recently David A. King has discovered in a manuscript from Hyderabad (Andhra Pradesh State Library ms 298) an important documentary source related to Andalusian, Maghreb (such as Ibn Ishāq) and Sicilian astronomers, including William II of Sicily himself, under the name Ghiyām ibn Rujjār. David A. King, "On the History of Astronomy in the Medieval Maghrib", in *Études Philosophiques et Sociologiques Dédiées à Jamal ed-Dine Alaoui* (Fez: Université Sidi Mohamed Ben Abdallah, 1988), 27-61.

²² Yūsuf ibn 'Abd al-Barr (978-1071) from Cordoba was renowned malikist jurist. On his life and works, see: Ibrahim Ibn Farhun, *Al Dibaj al-Mudhahhab fi Ma'rifat A'yan Al Maghhab* (El Cairo: Dar al-Turath lil-Tab wa-al-Nashr, 1943), 440-2 §626.

²³ Abū Muḥammad Sālih (1153-1234) was a *sufi* leader in Morocco and ruler of Safī. For more on his life see, Abu Muhammad Silihi, (1990), *Al-Manaqib wa-l-ta'rikh*, Rabat.

²⁴ Dietrich Rauchenberger, *Johannes Leo der Afrikaner. Seine Beschreibung des Raumes zwischen Nil und Niger nach dem Urtext* (Wiesbaden, Harrassowitz Verlag, 1999), 1-105.

²⁵ Leo Africanus, *De l'Afrique, contenant la description de ce pays par Léon l'Africain, et la navigation des anciens capitaines portugais aux Indes orientales et occidentales* (Paris: impr. de L. Cordier, impr. de Ducessois, 1830), t. I, 167-8: "Je logeai dans cette cité en la maison d'un mien parent, lequel étant en la cité de Fez, se trouva redevable d'une grosse somme de deniers pour s'être voulu adonner à souffler l'alquemie; au moyen de quoi nécessité le contraignit à venir en demeurer en ce lieu-ci".

²⁶ *Ibid.*, t. I, 421: "...et ne se faut pas persuader qu'il y ait faute d'alquémistes; car tant s'en faut que le nombre soit petit, qu'il y en a une infinité de ceux qui s'étudient à telle foile, mas la plus grande partie est de personnes ignares, de rude esprit, et qui puent démesurément, pour le soufre qu'ils manient ordinairement, avec d'autres odeurs qui ne sont guère plus plaisantes à sentir".

²⁷ *Ibid.*, t. I, 422: "Ils ont contume de se retirer le plus souvent au temple Majeur, pour plus à leur aise et hors du tumulte, disputer de choses concernant leur fantastiques imaginations, se réglant selon ce qui est écrit dans une grande quantité de volumes qu'ils ont traitant de telle matière, et composés par des hommes doctes et éloquents".

²⁸ *Ibid.*, t. I, 422-3: "Le premier de ces volumes a pris le nom de Géber, qui fut cent ans après Mahomet, et (comme l'on dit) fut un grec renié écrivant son livre et ses recettes toutes par allégories. Il y a encore un autre auteur qui a fait un grand oeuvre, lequel étoit apellé Attogrèphi, qui fut secrétaire du Sougdan de Bagdad, comme nous avons récitée en la «Vie des philosophes arabes»; et un autre, composé en cantiques, je dis tous les articles et principaux points de cet art, l'auteur duquel s'appeloit Mujairibi, grenadin, et fut commencé par un mameluck de Damas, homme fort docte et expert en cette science; mais la glose est beaucoup plus obscure et moins intelligible que le texte".

²⁹ The lack of definitive evidence makes his historical reality in doubt. For his works, see: Paul Kraus, *Jabir Ibn Hayyan. Contribution à l'histoire des idées scientifiques dans l'islam. Jabir et la science greque* (El Cairo, Imprimerie de l'IFAO., 1942). Fuat Sezgin, t. IV, 132-268. Pierre Lory, *Gâbir ibn Hayyân. Dix traités d'alchimie* (Paris: Sindbad, 1983). Pierre Lory, *Gâbir ibn Hayyân. L'élaboration de l'élixir suprême* (Paris, Damas, 1988). Syed Nomanul Haq, *Names, Natures, and Things: The Alchemist Jâbir ibn Hayyân and his Kitâb al-Ahjár (Book of Stones)* (Boston-Dordrecht-London: Kluwer Academic Publishers, 1994).

³⁰ For a list of his works, see: Manfred Ullmann, *Die Natur- und Geheimwissenschaften im Islam*, 227-31 and 252-3. Among the works under his name is the *Haq'iq al-istishhad* where he tries to replicate the anti-alchemical thesis of Ibn Sīnā (Avicenna). His most important work is the compendium *Mafatih al-rahmah wa-masabih al-hikmah* (esp. *Claves de la Misericordia y Secretos de la Sabiduría*). The work is made up of two parts that are often found in separate manuscripts. The first is divided into five chapters that incorporate extracts from works of prior alchemists. The second part includes a translation to the Arabic with extensive interpolations from the βίβλος κλειδων (esp. *Libro sobre las Claves*) attributed to Zosimos of Panópolis. Hassan S. El Khadem, "A Lost Text By

Zosimos Reproduced in an Old Alchemy Book,” *Journal of Chemical Education* 72 (1995): 774-5.

³¹ This book consists of short biographies of twenty five Arab and five Jewish writers. Johann Heinrich Hottinger, *Henrici Hottingeri, D. Bibliothecarius quadripartitus : I. Pars, quæ prolegomenis absolvitur, agit de officio bibliothecarij, bibliothecis, &c. II. De theologia biblica. III. De theologia patristica: cum appendice Leonis Africani hactenus □□□□□□□□ de scriptoribus Arabicis. IV. De theologia topica; symbolica, & systematica; tam universali, quàm particulari* (Zurich, sumptibus Melchioris Stauffacheri, 1664), 246-91. Johann A. Fabricius, *Bibliotheca Græca... XIII* (Hamburg: Sumtu viduae T. C. Felgineri et J. C. Bohnii, 1726), 259-98; cf. 276-278: “*Thograi Philosophus, ac Medicus, Rethoricus, Alchimista, Poëta atque historiographus natus est in Civitate Aspahan in Persia, et ob suas virtutes rogatus fuit a Malich Maschud (Masudo) Principe Regni Asiae, eique datum fuit majus officium Curiae, cum quo multas pccunias acquisivit atque inaeestimabiles divitas. Dicebant multi Historici, quod modus ipsius fuerit mirabilis, quoniam tempore suo fuit singularis in divitiis et non fuit in Curia, neque Principum neque Soldani homo, qui ditior eo esset; et hoc non obstante, nunquam contentus fuit, neque de Patrimonio suo, neque de divitiis acquisitis, cum omnibus Imperialibus Magistratibus. Et in omnibus canticis in vita sua recensitis continue lamentabatur, vituperans tempus, quod eum injuriaverat, adeoque coactus eo est Alchimiam addiscere, in qua composuit opus, cui titulus est Devirginatio Naturae. Dixit Geusis. Quod Dominus ipsius quadam die ingressus est tentorium Thograi; et invenit eum scribentum verum expeditiones. Princeps vero vidit duos versus quodam chirographo qui erant: Urido; etc. id est ad verbum: Volvi largitudine manuum auxiliari mihi, cum ea solverem debita, quæ nobilitati debeo si tempus pervertit desideria una, ut postea contentus sum labore cum reddito. Tunc dixit cum legeret versus hos: Thograi unum dicam tibi, et quadam die veritatem nosces. Ego enim Dominus dimidia Asiae sum, et tu quasi secundus, nec defecit nobis ulla gratia Dei, et nunquam contentari possum; sic tu idem demonstras: timeo nobis malum exitum: Quoniam sit volveris altionem gradum, aut ego; nil aliud erit nisi ut efficiamur Dii. Et sic non praeterierunt sex menses, quando Princeps revellavit, contra frater suum, volens se vi facere Suldandum. Quadam autem die venit Soldanus cum magno exercitu, et Principem cepit, et in caicrem duci jussit civitatis magnae, et Thograi similiter captus est, et ante Soldanum ductus jussit aligri et torqui: et tandem consessus est, se habuisse ducatum millia infinita, quam Soldanus exvere fecit, et nudum arbori alligare, jubens, praecipiensque pero suo, ut sagittis eum perdere. Cum autem vidisset eum accipere sagittas, ut in eum trahere, haec duo carmina ad eum traducta alta voce canere coepit. Dico dirigenti sagittas, ejus mors inter digitos tuos illustrat, Amore Dei, elonga te à corde meo. Nam in eo nihil oppositi nisi tu. Et omnes adstantes de ejus mirabili et constante intellectu vehementer mirabantur, cum taliter publice alligatus mortem expeteret, nec animicus quidem ejus deficeret; neque adacia componendi eo tempore versus careret. Porquam à puero transfonssus obiit, quoi mortuo praecipit Soldanus corpus ejus comburi, tanquam infamen haereticum. Praesentim enim in articulo mortis orationes non diceret, nec*

etiam animam ejus Deo commendaret. Saphadi autem ponit eum Thograi in suo famoso libro de mille Amorum martyribus. Opera volumina ejus multa sunt; vermilli, quae lognoscuntur sunt quae subsequuntur: - Chronica Asiae. - Chronica Imperatorum Persiae. - Comentum Republicae Platonis. - Devirginatio seu defloratio Natura in Alchimia..."

³² Ibn Khaldun, *Muqaddimah*, (El Cairo: Lajnat 'al-Bayan 'al-'Arabi, (1962-1967), VI, 29: "*Ibn al-Muḡayribī, alquimista destacado, tiene proverbios versificados cuya rima sigue la serie de letras del abecedario tomadas alternativamente. Estos versos se encuentran entre las composiciones poéticas más originales que existen, aunque emplean expresiones desconcertantes a modo de esquivos arcanos [de manera que] resultan difícilmente entendibles*". John Leo Africanus mentions the existence of his works in prose and verse, although I have only found another references in Ibn Khaldūn's *Muqaddimah*, where the originality of his poetical compositions is praised.

³³ Leo Africanus, *De l'Afrique*, t. I, 423: "*Ces alquémistes sont divisés en deux bandes, dont les uns vont cherchant l'élixir; c'est à savoir la matière qui tient toute veine et métal*".

³⁴ See a letter from Francisco Ibarra to Mateo Vázquez (1542-1591), secretary of Philip II, where he states that, "*...la mayor parte son mentirosos y embusteros...*". Madrid, Instituto Valencia de Don Juan, *Envío* 49, f. 91r.

³⁵ Vicente de Paul, *Correspondance, entretiens, documents. Saint Vincent de Paul; édition publiée et annotée par Pierre Coste, prêtre de la Mission*, 14 vols. (Paris: impr. J. Dumoulin / J. Gabalda éditeur, 1920-1925), t. I, 91. Depaul remained as a slave to this alchemist between September 1605 and August of 1606. In the same letter we learn that the technique described here had given the old man great prestige, so that the sultan of Constantinople (Ahmed I, from 1603 to 1617) summoned him to his court, but he died on the way.

³⁶ Juan Antonio de Estrada, *Población General de España* (Madrid: Imprenta de Andrés Ramírez, 1768), t. II, 169-170.

³⁷ Serafin Estébanez Calderón, *Manual del Oficial en Marruecos : ó cuadro geográfico, estadístico, histórico, político y militar de aquel imperio* (Madrid: imprenta de Ignacio Boix, 1844).

³⁸ Leo Africanus, *De l'Afrique*, 506: "*...je fus assez amplement acertené du contenu de cette histoire, et comme les choses étoient passés, par ceux mêmes qui s'y étoient trouvés en présence...*".

³⁹ Raymond Mauny, "Note sur les grands voyages de Léon l'Africain", *Hespéris XLI* (1954): 387.

⁴⁰ The most widely held theory is that al-Ḥassan ibn Muḥammad was held captive in the island of Djerba, of the coast of Tunis. However, in an excellent biography by Dietrich Rauchenberger he maintains that the site was actually the island of Crete. The captor of al-Ḥassan ibn Muḥammad was the Spanish corsair Pedro de Bobadilla, Caballero de San Juan. Dietrich Rauchenberger, *Johannes Leo der Afrikaner*, 64-65.

⁴¹ *Ibid.*, 60. see also: Louis Madelin, "Le journal d'un habitant français de Rome au XVI^e siècle (1509–1540)," *Mélanges d'archéologie et d'histoire [École française de Rome]*, XXII (1902): 251–300.

⁴² Henry de Castries, "Trois princes marocains convertis au christianisme", *Mémorial Henri Basset. Nouvelles études nord-africaines et orientales* (Paris, L'Institut des haute-études marocaines, 1928), vol. I, 141-58. D. Rauchenberger, *Johannes Leo der Afrikaner*, 72-4.

⁴³ Baltasar Collazos, *Commentarios de la fundación...*, 34v-37v.

⁴⁴ Leo Africanus, *De l'Afrique*, 505: "...par la menée secrète d'un soldat spagnol qui tua le capitaine pour lui avoir fait les cornes elle fut mise et retourna entre les mains des Maures".

⁴⁵ Baltasar Collazos, *Commentarios de la fundación...*, 37v-38r: "Sabida esta nueva en Gibraltar, hallóse en la Baya don Juan de Velasco, capitán general de las galeras de España, el qual se juntó con don Pedro Mazcarenas, general de las galeras de Portugal, y ambos acudieron a ver si tenía remedio tornarle a cobrar. Y a un mismo tiempo en Málaga, sabida esta pérdida por los oficiales del rey, embiaron una nao que llegó al Peñón el mismo día que las galeras, las quales quisieron llegarse al Peñón para echar gente en él y tomarle. Pero el rey de Vélez le tenía ya tan bien proveído de gente y artillería que no dexaron acercar a nuestra armada. Y visto por don Joan que no tenía remedio, se bolvieron sin hazer nada".

⁴⁶ Baltasar Collazos, *Commentarios de la fundación...*, 38r. Moorish attacks to Cádiz, Cartagena, Almería and Málaga were frequents. See: Madrid, Biblioteca Nacional de España, ms. 1778, (s. XVI¹), f. 151r-ss.

⁴⁷ Motril, Archivo Municipal, sesiones del 18-6-1518; 9-10-1518; 3-12-1518. Translated documents in María del Carmen Sobrón Elguea, (1978) "Motril en el Siglo XVI", in: *Actas del I Congreso de Historia de Andalucía. Diciembre de 1976. Tomo II, Andalucía Moderna: siglos XVI-XVII* (Córdoba: Monte de Piedad y Caja de Ahorros de Córdoba, 1978), 353 passim.

⁴⁸ *Ibid.*, 398.

⁴⁹ The marquis had started a tactical study of the situation in 1523 with the help of Rodrigo Ponce de León, I Duke of Arcos. The received the help of a Christian by the name of Fernando Albañí, who was in the service of the sultan of Fez. The plans are at: Toledo, Archivo Histórico Nacional, Sección Nobleza, *Osuna*, Mapas, MP. 5, D.113 (1 and 2) "Disposiciones dadas por Rodrigo Ponce de León a D. Juan de Guzmán, Capitán de Málaga, para la toma del Peñón de Vélez". Baltasar Collazos, *Commentarios de la fundación...*, 38v-39v: "Poseyendo el rey de Vélez el Peñón [...] tenía en su servicio cautivo a un christiano que se llamava Fernando Albañí, natural de Jaén, que havia sido soldado en el Peñón, que havia cautivado con los demás de la manera que hemos contado. Este, por sus habilidades y merced que Dios le quiso hazer, vino a privar con el rey en tanta manera, que se governava por el parescer deste y le tenía más como a hermano que como a esclavo. Desseando este aprovecharse desta privança y emplearla en servicio de Dios como buen christiano, trató por cartas con mucho secreto con don Hurtado de Mendoza, marqués de Mondéjar [...] comunicólo por cartas a su Magestad del

emperador don Carlos, de sancta y gloriosa memoria, que a la sazón estava en Burgos, el qual le dio licencia para que hiziesse esta jornada, y le embió cédula para Rodrigo de Portundo, general de tres galeras que España tenía, para que con ellas y armando algunas fustas, echasse al marqués y a la gente que llevasse al Peñón por la orden que él le diesse; el Portundo no quisiera hazer la jornada por algunos fines que él tenía, y assí, como fue de mala gana, hizo mala navegación”.

ISAAC HOLLANDUS REVISITED

ANNELIES VAN GIJSEN,

RUUSBROECGENOOTSCHAP / UNIVERSITEIT ANTWERPEN

There have been times when ‘Isaac Hollandus’ and his supposed son (or brother) ‘Johannes Isaaci’ were among the most famous alchemists of Europe. Kunckel spoke of ‘the incomparable Isaac Hollandus’, who ‘had more knowledge in his little finger than Van Helmont in his whole body’; Morin in his *Astrologica Gallica* wished to imitate ‘Alkimiae Principem sapientissimum Isaacum Hollandum’, and Hartprecht presented him, on the title page of his edition (1659) as ‘highly enlightened, profound and famous for his great experience’.¹ Isaac Hollandus partly owed his former great fame to the idea that he (or they) lived in the fourteenth or fifteenth centuries. Paracelsus would have read and used his (their) works, though he never mentions his (their) name. ‘They’ fell out of grace at the beginning of the twentieth century, when ‘they’ were exposed as postparacelsians.

In this paper I will discuss some old and new myths, the present state of the question and future perspectives. This will take us back in time from scholarly and creative publications of the twentieth century to successively the printed editions, the early manuscript reception in German, and the earliest Dutch manuscripts.

The Hollandus myth

The myth that Isaac Hollandus would have inspired Paracelsus came up early; it was caused by a number of similarities between their works, which made their readers suppose a direct relation. In his *Tractatus varii* (1594), Bernard G. Penot (ca. 1520-1617) says that Paracelsus derived many ideas from earlier authorities and took his *tria prima* from the work of Isaac Hollandus.² As early as 1582, Penot had selected and published a fragment from Isaac’s theory which might support this view (see *infra*, note 28). In his *De Denario medico* (1608) he goes farther: nothing that Paracelsus ever wrote was of his own invention, except the rudeness; if only all the works of the great Isaac Hollandus and his brilliant son

Joannes could be found and published, those of Paracelsus could be thrown away. When Paracelsus predicted the advent of the prophet Elias Artista, who would reveal all secrets, he really meant that Isaac's works would become public in the future.³

In his dedication of the Latin edition of the *Opera Mineralia* (1600) to Georg Eberhard count of Solms, a certain L.D. had already presented the idea that Paracelsus depended on Isaac Hollandus as a truth universally accepted, adding that Paracelsus certainly would not grudge Isaac his due praise.⁴ As nobody ever seems to have met (one, or either) Hollandus in flesh and blood, he was tentatively dated somewhere between Arnaldus de Villanova, as his most recent source, and Paracelsus. This was generally believed and repeated till about 1900.

The Hollandus debate in the early 20th century

At the beginning of the twentieth century, the old myth was challenged, and eventually reversed.⁵ The discussion was launched in 1908, by a letter from Sudhoff to E. O. von Lippmann. Von Lippman had mentioned Isaac Hollandus in a publication on potassium, innocently stating that Isaac lived about 1450.⁶ Sudhoff pointed out that there was no material evidence at all that these works would be anything but postparacelsian. Von Lippmann was converted to Sudhoff's opinion; in 1916 he wrote that Ben Jonson's play *The Alchemist* (printed in 1610) supported a late date, and in 1919 he gave a detailed discussion of all the evidence that Hollandus was a postparacelsian.⁷ Holgen (1917) and Diergart (1919) supported his point of view;⁸ Schelenz (1917), Jorissen (1917-1918) and Moerman (1932) tried to maintain an earlier date for Isaac Hollandus,⁹ but their opponents argued that their reasons were entirely unconvincing.¹⁰ Sudhoff 1934 can be seen as the last voice in the debate.¹¹ From then on, the question: 'When did Isaac Hollandus live?', invariably followed by two options: 'Before or after Paracelsus'? was decided in favour of 'After Paracelsus'.

A by-product of the Hollandus-discussion was a work of fiction: the novel *Isaac Hollandus, de alchemist van Stolwijk* (Zeist, De Torentrens, 1937) by the chemist-pharmacist dr. Marius Wagenaar. Combining a modern view on date with an earlier myth on place, the author takes 1608-1610 as the time of action, located in Stolwijk. Boerhaave was the first to mention Stolk or Stolwijk, near Gouda, as the place of origin of the Hollandi; later works usually take this over as a fact, though Boerhaave never tells us where he found his information.¹² Now Borel, in his

Bibliotheca Chimica, mentions ‘Isaac pater & filius, chymici sunt ex Stolcio & sequentia composuerunt opera’, followed by a list of titles.¹³ Apparently Boerhaave has mistaken this reference, possibly via a note ‘ex Stolc.’ If so, Isaac did not come from Stolwijk, but from a work by Daniel Stolcius which Borel consulted for his bibliography. We will see later that it is not even very likely that Isaac really was a Hollandus.

Wagenaar describes the last years of Isaac’s life, when he and his son Johannes had settled in Stolwijk. The illiterate and superstitious natives of Stolwijk do not trust the alchemists; Isaac is even tried for witchcraft. Isaac is eager to find the philosophers’ stone before his death; his son Johannes secretly tries to make the elixir of life to restore his old father’s poor health. It will hardly surprise the reader that eventually both Isaac and Johannes are disappointed: the stone does not work and the elixir is the equally ineffective, or even worse than useless.

Wagenaar freely mixes fact and fiction, as is usual in this sort of book.¹⁴ Others sometimes present speculations on the Hollandi as hard facts. One of these myths is the idea that they were Jewish (as the works are liberally sprinkled with the Holy Trinity, Jesus Christ, etc., this is obviously untrue), and that Isaac was a diamond cutter and Johannes a physician.¹⁵ Isaac’s leadership of a kind of proto-Rosicrucian society is equally mythological.¹⁶

The late dating of Hollandus had consequences for the explanation of the fact that Paracelsus and Hollandus never refer to each other, though there are similarities between their works that have inspired a (possibly mistaken) belief that one of them must be plagiarizing the other. Diergart¹⁷ had called Isaac Hollandus a ‘falsification’, and his point of view is summarized by Curtis Schuh as follows:

It has now been established that Hollandus wrote after Paracelsus but wanted to pretend that he antedated his writings. He therefore omitted any mention of sixteenth century authorities, because Paracelsus died in 1541.¹⁸

This view explains why Hollandus’ reputation was so much damaged: he is not only later than tradition had it, but he assumed a fake personality, deliberately pretending that he was earlier than he actually was to cover the fact that he plagiarized Paracelsus.

The status quaestionis

We owe the latest summary of the status questionis concerning ‘Hollandus’ to Julian Paulus (1998).¹⁹ Paulus rightly points out that there

is no reliable biographical evidence about the 'Hollandi' at all. Some of the works current under these names show Paracelsian influence, and therefore must have been written in the sixteenth century or later. The earliest manuscripts are from about 1560. Because of the name 'Hollandus' they have been supposed to be from Holland, but this is quite uncertain; little or no research has been done on the content and reception of their works.

This is quite true: there is a great silence around 'Hollandus' in scholarly literature about alchemy since the second half of the twentieth century.²⁰ This probably has to do with the lack of information on his (or their) person(s) and life and the date, place and language of origin of his (or their) works. The huge quantity of manuscripts and printed editions is rather discouraging, and if the author (or authors) is supposed to be plagiarizing Paracelsus, he is hardly a person from whom great honour can be derived.

Yet, from a historical point of view, 'Hollandus' was a very important and influential author (or firm?). Could anybody ever have got so famous as an alchemist as he did, by just copying phrases and ideas from Paracelsus? It is interesting that Angelo Sala calls Raymundus and Arnaldus, Paracelsus and Isaac Hollandus the four best alchemists ever known;²¹ Raymundus and Arnaldus certainly belong to Isaac's favourite authorities.

The many works in manuscript and print associated with this author (or these authors) are usually and conveniently classed as mineral, vegetable and animal works. The mineral work usually opens with a prologue which explains why the mineral work is a lot safer than the vegetable or the animal work, advising the reader, addressed as 'my child', to start on the mineral work.²² This is followed by a series of varied 'works of the ancients', by recipes for elixirs from aquaforts and procedures to prepare the salts and oils of the metals. The order of other treatises belonging to the mineral work can vary; these include a treatise on how to make the philosophers' stone from the two luminaries (sol and luna), the three orders of the elixir, a basic work of twelve months on gold, silver and mercury, a treatise on projection, and a number of shorter recipes. The procedures are usually described in full detail; theoretical speculations are often introduced by 'Now my child might ask', and closed by 'Now we will go back to our work.' 'This is what the ancients really meant, when they said...' is the standard opening of some short references to alchemical allegories.

To the vegetable work belong general theories about nature and the elements. The practical part discusses two different ways to prepare the

quintessence of herbs, followed by the work on wine. The vegetable work also includes treatises on the quintessence of sugar, chelidony and sundew, and the famous work on lead (*Opus Saturni*),²³ the reason given for this is that the vegetable stone from Saturn is an excellent medicine.²⁴ Works on glass and enamel were also among the vegetable work, probably because the potassium needed for this was made from plants.

The animal work includes preparations of the quintessences of honey and of human blood, and several works on urine. The works usually include pious considerations, moral exhortations ('praise God and be generous to the poor') and urgent demands to reserve the more special secrets for the worthy only.

The Hollandus' original tongue

As a start, I can do little more than just explore some points concerning the language and date of origin of the works ascribed to 'Hollandus', or the 'Hollandi'. In his *Symbolum aureae Mensae*, Michael Maier mentions two Hollandi, father and son, both named Isaac. Isaac junior wrote in the vernacular, 'vernaculo, *Belgico* idiomate'; the mineral work was printed in Latin, and the vegetable work is available in plenty 'in manuscripto teutonico'.²⁵ I understand this as referring to Dutch as the original language, since *Belgica* at the time is a general name for the Low Countries. The meaning of 'teutonico' is very much context dependent; Maier probably means German, though there is some confusion about this word and Diets, Duuts, Duits, Deutsch and Dutch (in old French: thiose), which in a broad sense all mean 'the language of the people'.

Melchior Adam, in his short account of the life of Paracelsus, mentions a 'Jacobus Isaacus Hollandus', who wrote excellent works *linguâ vernaculâ*.²⁶ Adam does not tell us in which vernacular, but according to Gabriel Naudé, who quotes Penot 1608 as well, Adam says that the learned 'Isaac Hollandois' wrote in German.²⁷

Now Penot was the first who ever published any 'Hollandus' material (1582),²⁸ but he does not tell us who translated these texts into Latin, and from which language they were translated. Some of the later editions of Hollandus offer information on this point, though the terms used may be confusing. The title page of the Latin edition of the *Opera Mineralia* (Middelburg 1600) states that the book was faithfully translated from the best Teutonic manuscripts, which certainly means: from the Dutch. In the Low Countries, the words *Teutonice* and *Germanice* were not synonymous, but were used to differentiate between Dutch and German; the first Dutch-French-Latin dictionary, printed by Plantin in Antwerp

(1573), is called *Thesaurus Theutonicae linguae, Schat der Nederduytscher Spraken*. ‘Nederduits’ may mean (and now means) Low German, but in the past it usually just meant Dutch, as opposed to ‘Hoogduits’ (German). In English, ‘High Dutch’ definitely meant German, but just ‘Dutch’ could also mean German.

Johann Hartprecht, in his edition of the *Opus Vegetabile* (Amsterdam 1659), clearly states that he translated the work from Dutch to German (see *supra*, n. 1). This is also the case for two of the three Hollandus editions published by Thomas Matthias Götz in Frankfurt am Main: *Das Dritte Theil des Mineral-Wercks* (1666) and *Die Hand der Philosophen* (1667), both translated by an anonymous ‘experienced lover of Hermetic philosophy’.²⁹ This translator wrote that he had no time to translate the mineral work, and wished that somebody else would do this.³⁰ *De Lapide Philosophico oder vom Stein der Weisen* (1669) has a dedication to Helvetius signed by the publisher Götz, who almost apologizes for publishing this text; friends put him under pressure.³¹ Though he does not explicitly say so, I feel sure that he printed a long-existing German translation.³² The *Curieuse und Rare Chymische Operationen* of 1714 are in the same line, even more so.³³ The editor, a certain R.H.C., believes that he is publishing an autograph, which must mean that he thought that Isaac wrote in a (rather odd) kind of German, and there are reasons to believe that he did use a very early manuscript. I will come back on this issue when speaking of the earliest manuscript in Dutch.

A considerable part of the printed texts claims to be translated from the Dutch, which seems to support a Dutch origin of ‘Hollandus’. Now most of these editions were published much later than the texts in manuscripts, and there are very few manuscripts in Dutch, and many in German.³⁴ We will have to go back to an earlier stage of the tradition for better evidence. I will discuss some details in the ‘Hollandus’ reception to argue that at least some of the works ascribed to ‘either’ Hollandus were originally written in Dutch. The words ‘amaus’ and ‘begot’ are clues.

Dutch origin

In his commentary on Neri’s *Art of Glass*, translated from the Italian (*De Arte Vetraria*, 1612) and published in 1662, Christopher Merrett explains the word ‘amausa’ as follows:

‘The chymists have invented a peculiar though barbarous name for these pasts, and no where extant but amongst themselves. They call them *Amausa*, so Libav[ius and] Joan[nes] Isaac, but Glauber *Amausae*, which, whether derived from *Musaicum* (not *Mosaicum* as Vossius in his

Glossary, proves at large) I determine not, though this *Etymon* be very probable.³⁵

Between 1602 and 1609, the Italian priest-chemist Antonio Neri (1576-1614) spent seven years in Antwerp, where he and his host, the rich merchant Emanuel Ximenes, experimented with alchemy and glass making.³⁶ Neri mentions Isaac Hollandus in his *De Arte Vetraria* (1612); his words have been taken as a proof that Isaac was living in Antwerp at the time, though the phrase he uses would rather mean that he ‘took’ some excellent procedures for making *amausa* from Isaac Hollandus, than that he ‘got’ them.³⁷ As his host had a splendid library and owned both printed books and manuscripts with Hollandus texts, it is most likely that Neri used these writings.³⁸

It was Neri who introduced the word ‘amausa’ into the international glass-makers’ vocabulary, and he derived it from the writings of Hollandus. ‘Amaus’, plural ‘amausen’, is a good Middle Dutch word of uncertain origin; the *Middelnederlandsch Woordenboek* mentions French *émaux*, but there have been other suggestions.³⁹ Before the sixteenth century, an ‘amaus’ is usually a heraldic badge or some other enamelled object, usually of precious metal and made by a goldsmith; later, it became a word for enamel. Now Isaac ‘Hollandus’ was famous for his knowledge of amausen and imitation gemstones. The *Mineral Work* refers to detailed instructions on the subject, extant in Isaac’s vegetable work. This full treatment was, as far as I know, never printed, but I still hope to find it somewhere in manuscript. The passage in the mineral work describes an amaus as a half-finished product of vitrified metallic oxides, sold by the weight (per ounce, or in the crude per pound), and used to decorate objects (possibly golden or silver cups and so) and to make artificial gemstones.⁴⁰

Ganzenmüller has pointed out that a manuscript *Kunstbuch* (Heidelberg, Cpg 220)⁴¹ contains an excerpt from the *Opera Mineralia* of Hollandus concerning amausa, without any reference to a source or author.⁴² The recipes and procedures in this manuscript, written about 1576 or a bit later, were selected and copied from similar earlier collections by Guillaume Rascalon and Beringer von Kotzau. Ganzenmüller concludes that work by Hollandus was known in Germany from about the middle of the 16th century. He has a note on the origin of the word ‘amaus’ (232), without mentioning the variants of the word in the manuscript, which actually does not even contain the word ‘amaus’. The passage in question was copied twice (on f. 58v-59v and on f. 68r-69r), possibly from different sources or translations; the first speaks of ‘amatisten’ (‘how to make a nice green amatist of Venus’), the second calls them ‘amansen’. We also meet these

‘amansen’ in Voss. Chym. F 26 (see below), and in *Curieuse und rare chymische operationen* (1714). I think that the use and the distortion of the word ‘amaus’ is a proof that at least this part of the *Opera Mineralia* was originally written in Dutch.

Another detail which leads to the same conclusion for a different part is a quotation from Hermes, Morienus, and/or Geber: ‘Do not despise the ashes on the bottom, for in it is hidden the diadem of your heart, and, as Geber adds, a virgin who will conceive and produce a son, which conception will be caused by the ferment’. The Hollandus version has a diamond rather than a diadem and speaks of a virgin who will get ‘begort’: pregnant.⁴³ This word has confused his translators: in German we find someone or something that will be girdled, surrounded, or desired (‘umbgürttet’, ‘umgeben’ or ‘begehrt’).⁴⁴ By these and similar examples we can find out which parts of the corpus were translated from the Dutch; so we do need bad translations indeed to progress into the knowledge of the original Hollandus text (the worse, the better). Yet, unfortunately, this will not help to find out whether the original Dutch texts were all written by one and the same author.

A more important point is the attribution of texts. In the German *Aurora Philosophorum* (1569 or earlier), translated into Latin by Gerard Dorn and published by him in 1577 under the name of Paracelsus,⁴⁵ ‘Isaac’ is mentioned as a source in the processes on vitriol and antimony in the chapters 13 and 14. This is the case in both Heidelberg *Aurora* manuscripts (Universitätsbibliothek Ms. Cpg 600 and Cpg 303) and in the Kassel manuscript (Landesbibliothek, Quarto Ms. Chem 8, f. 1-27), all written before Dorn’s Latin text was printed. Isaac is also mentioned in the excerpts of the German *Aurora* (chapters 13 and 14) copied by Karl Widemann ca. 1588 (Leiden, Universiteitsbibliotheek, Cod. Voss. Chym. Q 17, f. 133r-137v). Of these four pre- or non-Dorn versions, only the Kassel manuscript (ca. 1574?) bears the name of Paracelsus; but the chapter on vitriol mentions Isaac, with a note in the margin (17r) stating that Paracelsus’ procedure is different! This chapter is very close to the theory and instructions concerning the oil of vitriol in ‘Hollandus’ *On the salts and oils of the metals* and it contains several other characteristic ‘Isaacian’ details.⁴⁶ Chapters 12 to 15 of the *Aurora* are also closely related to the treatises on the oil or tincture of vitriol and antimony later printed as Roger Bacon and Paracelsus⁴⁷; in the earliest manuscript of the *Aurora*, Heidelberg UB, cpg 600, these chapters seem a rather distorted abbreviation, and Dorn’s Latin text is a lot worse.⁴⁸

A note on the Dutch *Aurora* excerpts in the Justus a Balbian-manuscript (London, British Library, Ms. Sloane 1255) might be relevant. These were *copied* (not translated) ca. 1600 by Justus a Balbian and certainly go back to Dorn's Latin, but probably indirectly.⁴⁹ This version contains 8 chapters out of 20: the first six chapters are replaced by a short preface, in which Paracelsus is quoted (but not as the author of what follows).⁵⁰ The chapters 7-10 and 17-20 are given with some slight abridgments and several obvious errors of translation (Latin to Dutch), and also contain errors of transcription of more dubious origin. The reason why chapters 11-16 are skipped is very interesting. The preceding text advises against a long list of common errors in alchemy and of procedures which one should not follow. In the German and Latin texts, what follows (in the text copied by Balbian) is the end of Chapter 10:

Maer om dat ick compassie met u hebbe soo sal ick u gaen leeren dye drye principale particulaere Arcanen: te weten dat eerste door den *Arsenicum*, dat tweede door den *Vitriolum* ende dat derde door den *Anthimonium*, uyt dye welcke drye ick u sal leeren maecken de projectie op den mercurium ende op alle andere onperfecte metalen, ..

(But because I feel compassion for you I will teach you the three principal particular Arcana, namely, the first through Arsenic, the second through Vitriol and the third through Antimony, from which three I shall teach you to make projection upon mercury and on all other imperfect metals, ...)

But instead of giving the promised three arcana and their projection (chapter 11-16), the Balbian copy continues:

... hyer niet van noode meer te verhalen daer af of te leeren, want ic heb se u hier vooren leeren maecken... (f. 209v)

(... which need not be repeated or taught here anymore, because I have taught you to make them previously...)

and instantly jumps to chapter 17. This seems to mean that information on the subject has been given in Dutch, so these three arcana and their projection were apparently available in that language. This reminds me of a manuscript mentioned in the Ximenes-inventory of 1617: 'Johannes Isaac Opus minerale de arsenico, vitriol[o], antimonio'.⁵¹ This rather sounds like *Aurora Philosophorum*, chapters 11-16. This could be another, quite strong argument that the original 'Hollandus' tongue actually was Dutch.

New perspectives: early manuscripts in Dutch

Three manuscripts in Dutch are very relevant to the ‘Hollandus problem’.⁵² And they have one important detail in common: none of the three originally mentions the name ‘Hollandus’. The earliest of these manuscripts (Utrecht, Universiteitsbibliotheek, Ms. 708) is a convolute; the relevant unit was written ca. 1503, certainly not later than the first decade of the 16th century. It contains selected items from a series of recipes which was later copied and printed in Hollandus’ *Mineral Work*. The second (Leiden, UB, Voss. Chym. Q 37) was written ca. 1545-1550. Originally, this manuscript was anonymous; a different hand has added ‘Isaac Hollandus’.⁵³ Variants of a substantial part of the texts in this manuscript were printed in *Das Dritte Theil des Mineral-Werck* (1666).⁵⁴ The printed text is better and more complete; the manuscript shows signs of abridgement (there are many ‘etcetera’s’) and a limited interest in theory; the treatise on wine starts with the practice (in later versions this is preceded by a theoretical introduction).⁵⁵ Part of the text is inspired by Lullius’ *Epistola accurtationis*. The third manuscript is London, Wellcome Historical Medical Library, Ms. 359, catalogued as from 1563 but possibly a bit later.⁵⁶ It contains texts in Dutch, in ‘Germanized Dutch’ and in German (a note by one of the main scribes on f. III 102v shows that it was once in Cologne). Nine treatises in this manuscript are ascribed to a certain Isaac, with no other names. Some of these are also in the Leiden manuscript, and all but one of them were later printed, in Latin and in German, as either by Isaac Hollandus, or (usually) by Johannes Isaac Hollandus.⁵⁷ As this is a very messy manuscript it is not always clear where an Isaac treatise ends, but the beginnings are more or less systematically marked with small paper tabs. There is a tab but not a name at the beginning of the recipes that are also in the Utrecht manuscript. The burning question is now: were all the ‘Isaac’ texts in Wellcome 359 written by one and the same person, or not? And did this ‘Isaac’ also write the anonymous texts in the two earlier manuscripts?

There are textual clues that might help to solve this problem: some of the texts copied or printed under the name of ‘Isaac (Hollandus)’ and variants contain references to other, earlier texts that give more information on a certain subject. This subject is usually described, and now and then even a chapter number is mentioned. From these cross references it appears that most of mineral work was written at a moment when the vegetable work was completed, or at least had a ‘received’ chapter numbering. They also show that the vegetable work contained a lot of theoretical speculation on subjects like ‘the work of Nature’. The

highest chapter number that is mentioned is 312; Chapter 312 would give instructions on how to bring each of the elements to a crystal stone.⁵⁸ It must be this reference that has made posterity conclude that a lot of the vegetable work was lost.⁵⁹

There is one reference of this kind in the Utrecht manuscript. In the recipe for an oil to the red we are told that at a certain stage we will see many colours appear in the helmet. This is because the spirits rise in the helmet, and the colours are in the spirits. Later the body will absorb the spirits, and then the colours will be covered by the body, 'as is well taught in the vegetable works, where is taught about the colours; if you want a true understanding, look at the 93th chapter, where the colours are fully explained.'⁶⁰

A similar reference, though unfortunately without a chapter number, occurs in the *Opus Saturni*. The text tells us that all arsenic is red as blood inside, and can be turned inside out. The London manuscript (Wellcome 359) has 'as is well explained in the book on colours', adding that Saturn contains a red sulphur, which will show when he is turned inside out, as all colours are in the spirits (f. II 86v). If the *Opus Saturni* would refer to the same text and chapter as the Utrecht manuscript, this would mean that the work to which it refers is older than ca. 1503. It certainly seems promising to collect and check all similar references, and to try and find out what they refer to.

The two earliest manuscripts are both from the southern Low Countries, and judging from the dialect, probably from Brabant; they are anonymous. The name Isaac first appears in the London manuscript of ca. 1567.⁶¹ A manuscript of the *Mineral Work* of the same year is ascribed to 'Joh. Isaac Flander'.⁶² The German Leiden UB Voss. Chym. F 26, also of 1567, is partly anonymous and has 'Isaac the excellent philosopher' for the treatise on projection, the last item in the volume.⁶³ The scribe seems to have suspected that this Isaac also wrote the preceding work.⁶⁴ The first dated manuscript in German which has 'Isaac Hollandus' is the manuscript of 1572,⁶⁵ but as this is a copy the name was certainly in at least one earlier manuscript, and some undated sixteenth-century 'Isaac Hollandus'-manuscripts in German may also be earlier. Apparently, the surnames 'Flandrus' and 'Hollandus' were only acquired after export, and probably only mean that the texts were actually translated from the Dutch (people not living in the Low Countries would carelessly call anybody from there a Holländer, or a Fiamingo). For some texts this is very likely, as I hope to have shown. As we do not know and probably will never know the author's real name, I think we will find out very little about his biography, though there are some details in the texts that may be of help.⁶⁶

Some conclusions

I would like to propose to call our author *Isaac, and define him as ‘the artist whose works were written in Dutch and were translated, copied and printed under the name of either Isaac Hollandus, Isaac Flandrus, Johannes Isaac or Johannes Isaaci Hollandus, and who probably wrote all or a considerable part of the texts ascribed to Isaac in London, Ms. Wellcome 359’. Jorissen and Moerman have fruitlessly tried to sort out which of the texts were written by the father, and which by the son, on the only basis of the printed editions. As most of the texts by *Isaac in the London manuscript were later printed as Johannes Isaacus Hollandus⁶⁷, I see no reason to maintain the idea that the distinction is relevant. On the other hand, it is very improbable that the many texts copied and printed under these names were all written by the same person. Texts by *Isaac may have got mixed up with other material before or after they were translated. At least one item seems to have got in after translation to the German: a ‘recipe found in a wall’. This recipe is not in the London manuscript, nor in the Latin edition of 1600; it is in the German printed editions⁶⁸ but it had got into the German translation of the mineral work in or before 1567, as witnessed by Leiden, Voss. Chym. F 26, f. 212r-v. As it happens, Sudhoff and Jorissen have both seen this manuscript, but neither has recognized the work.⁶⁹

There are several characteristics of *Isaac that may help to identify texts written by him. He has some stock phrases but not everybody admires his style, so these traits can occasionally be removed by some copist, translator or editor (e.g. ‘My child shall know that...’ can be replaced by ‘Know that...’, and ‘Now my child might ask...’ by ‘Quaestio’). Moreover, it is not difficult to imitate. *Isaac probably invented the term ‘water of paradise’, but as he quotes Hermes on this water it is probably a translation of *aqua caelestis* (possibly because Dutch ‘hemelwater’ is a usual word for ‘rain’). He knows a limited number of *dicta* and has a few favourites, which he often uses. He uses a ‘*Turbaplus*’: he refers to ‘Morienus’ and ‘Geber’ ‘in *Turba*’. He often quotes a philosopher whose name appears as Daudin, Dantin, Dandin, Danthyn, Danthinus, Dondynus, etc. (not Dastin but possibly Daucim, an alias of Zosimos, mentioned in Morienus⁷⁰). He likes to use examples from everyday life to explain the great work and the principles of nature (the cook, the dyer). He uses the Hail Mary and the Lord’s Prayer as a unit of time (in the Utrecht manuscript, in the *Opus Saturni*, and in the *Work of twelve months*⁷¹), but this may have been imported from a source. He has certain preferences for matters, procedures, materials and even quantities.

He calls vitriol ‘the stone which God has given us *gratis*’. He has interesting ideas about eschatology and the resurrection of the bodies. He is fond of colours. He admires Geber, Arnaldus de Villanova and Lullius, and believes that the latter wrote Rupescissa’s *De consideratione quintae essentiae*. But of course it is questionable which of these characteristics are specific enough, and how many of these should occur in a text to make *Isaac the probable author.

A further survey and shifting of the *Isaacian corpus in manuscripts and printed editions is needed to find out more. Though this will truly be a work of Saturn, the perspectives look very promising. For the time being, I dare to suggest that *Isaac did not get so famous by copying Paracelsus, as the three earliest manuscripts in Dutch seem to indicate that *Isaac has never ever heard of him (but the reverse is probably equally true). There might be different, more, and better reasons why he was so much esteemed by many learned and famous persons. I will do my best to rediscover and restore a very interesting alchemist: (pseudo-?)Isaac pseudo-Hollandus.

Notes

My sincere thanks are due to Didier Kahn for his good help and valuable suggestions.

¹ Johann Kunckel von Löwenstern, *Collegium physico-chymicum experimentale, oder Laboratorium chymicum* [.]. Hamburg und Leipzig, Samuel Heyl, 1716, 668; 518. Joannes Baptista Morinus, *Astrologia Gallica principii et rationibus propriis stabilita atque in XXVI libros distributa*. Hagae-Comitis, Adriaan Vlacq, 1661, 678. [Johannes Isacus Hollandus], *Des hocherleuchteten, tiefsinnigen, und wegen unvergleichlicher experientz durch gantz Europam berühmten Philosophi, Physici und Medici, Domini Johannis Isaci Hollandi Opus Vegetabile* [...]. *Auss Niederländischen Manuscriptis* [...] *verhochdeutsch* [...] *vom Sohn Sendivogii, genant J.F.S.H.* Amsterdam, Henricus Betkius, 1659. Copy: Dresden, Sächsische Landesbibliothek, Staats- und Universitätsbibliothek, <http://digital.slub-dresden.de/sammlungen/titeldaten/278468764/>.

See Joachim Telle, ‘Zum “Filius Sendivogii” Johann Hartprecht’. In: Christoph Meinel (ed.), *Die Alchemie in der europäischen Kultur- und Wissenschaftsgeschichte*. (Wolfenbüttler Forschungen, Bd. 32), Wiesbaden, Harrassowitz Verlag, 1986, 119-136.

² Bernardus G. Penotus (aut./ed.), *Tractatus varii de vera praeparatione et usu medicamentorum chymicorum* [...]. Francofurti, Joannes Feyrabend, 1594, 219. Copy: Dresden SLUB, <http://digital.slub-dresden.de/sammlungen/titeldaten/274711850/>.

³ Bernardus G. Penotus (aut./ed.), *De Denario medico, quo decem medicamentibus, omnibus morbis internis medendi Via docetur* [...]. Bernae, Joannes le Preux, 1608, 202-203. Copy: Lausanne, Bibliothèque Cantonale et Universitaire, digitized by

google. See also Antoine Faivre, 'Elie Artiste, ou le Messie des Philosophes de la Nature' I. In: *Aries* 2 (2002), 119-152, and II. In: *Aries* 3 (2003), 25-54, esI, 129-133.

⁴ Joannes Isaacus Hollandus, *Opera Mineralia, sive de lapide philosopho, omnia, duobus libri comprehensa. Nunquam antequam edita, ac nunc primum ex optimis manu-scriptis Teutonicis exemplaribus fidelissimè in Latinum sermonem translata, à P.M.G. Middelburgo, Richardus Schilders, 1600*. Copy: München, Bayrische Staatsbibliothek, digitized by google. See f. A5 r-v.

⁵ I want to thank Dr. Pieter Boer (De Bilt, Netherlands) for his kind and generous help, especially for his unpublished study of twentieth-century publications about Hollandus.

⁶ Edmund O. von Lippmann, 'Zur Geschichte der Pottasche und ihres Namens.' In: *Chemiker-Zeitung* 32 (1908), 977-978.

⁷ Edmund O. von Lippmann, 'Zur Geschichte der Pottasche und ihres Namens.' In: *Chemiker-Zeitung* 34 (1910), I, 1217-1219; II, 1226-1228; III, 1235-1237, esp. I; Edmund O. von Lippmann, 'Über das Zeitalter der Alchemisten J. I. und I. Hollandus.' In: *Chemiker-Zeitung* 40 (1916), 605 (also printed in his *Beiträge zur Geschichte der Naturwissenschaften und der Technik* I, Berlin, Verlag Julius Springer, 1923, 228-229). Edmund O. von Lippmann, 'Über die unter den Namen der "Hollandi" bekannten Alchemisten.' In: *Chemiker-Zeitung* 43 (1919), I, 265-267; II, 265-267; III, 301-301 (also in his *Beiträge* I, Berlin 1923, 229-250). The 'Jonson-argument' is questionable, as it depends on the interpretation of the lines 'The spirit (variant: spirits) of dead Holland, living Isaac / you'd swear, were in him', but this is said about someone who will be lucky in playing cards.

⁸ H. J. Holgen, 'Über das Zeitalter der beiden Alchemisten J.I. und Isaac Hollandus.' In: *Chemiker-Zeitung* 41 (1917), 643. Diergart, 'Die "Hollandus"-Schriften, eine Fälschung in der 2. Hälfte des 16. Jahrhunderts.' In: *Chemiker-Zeitung* 43 (1919), 201-202.

⁹ H. Schelenz, 'Wann lebten die Alchemisten Johann Isaak und Isaak Hollandus?' In: *Zeitschrift für angewandte Chemie* 30 (1917), Aufsatzteil, 195-196. W. Jorissen, 'Isaac de Hollander en Jan Isaacsz. de Hollander' I. In: *Chemisch Weekblad* 14 (1917), 304-310; II, *ibid.* 897-903; III, In: *Chemisch Weekblad* 15 (1918), 1343-1351. J. D. Moerman, 'Uit alchemistische geschriften. Isaac en Johan Isaac Hollandus.' In: *Chemisch Weekblad* 29 (1932), 702-709.

¹⁰ Against Moerman 1932: Edmund O. von Lippmann, 'Zur Kenntnis der "Hollandi" genannten Alchemisten'. In: *Chemiker-Zeitung* 55 (1933), 233-234.

¹¹ Karl Sudhoff, 'Bibliographie Isaaks und Johannis Isaaks der "Holländer".' In: *Archiv für Geschichte der Medizin und der Naturwissenschaften* 27 (1934), 45-50.

¹² Hermannus Boerhaave, *Elementa Chemiae [...]*. Lugdunum Batavorum, Isaacus Severinus, 1732, Vol. 1, 18: 'Isaacus Hollandus, & Johannes Isaacus Hollandus, oriundi ex Stolk Hollandiae oppidulo'. Copy: Wolfenbüttel, Herzog August Bibliothek: vol. 1 <http://diglib.hab.de/drucke/nd-782-1/start.htm>.

¹³ Petrus Borellus, *Bibliotheca chimica, seu catalogus librorum philosophicorum hermeticorum [...]*. Heidelbergae, Samuel Brown, 1656, 119 (this is the second edition). Copy: München, Bayerische Staatsbibliothek, digitized by google. Borel

refers to Stolcius in several other places (e.g. 69: 'Dantius, chemicus est, ex Stolcio'; 205 'Taphuntia virgo Arabs: ex Stolcio').

¹⁴ The date of the action, early seventeenth century, shows that Wagenaar takes over the recent view on Hollandus, against the old myth. In other matters, he is less critical: Isaac and Johannes have been in Erfurt where they have seen a manuscript of the great Basilius Valentinus, which was found in the cathedral, close to Basilius' grave!

¹⁵ Raphael Patai, *The Jewish Alchemists. A History and Source Book*. Princeton, Princeton University Press, 1994, 289-292. Occasionally Isaac is confused with the physician Isaac Judaeus (9th-10th); some early references to a certain 'Isaac' which Moerman and others used to prove an early date for 'Isaac Hollandus' actually refer to Isaac Judaeus; see also von Lippmann 1933 (title supra, note 10). This is also the case for Glasgow University Library, MS Ferguson 209, catalogued as 'Johann Isaac Hollandus : De urinis. XVth century. MS. on vellum. 1. f3-39 Tractatus urinarum Isaac translatus a quonstantino africano [Constantinus Africanus] in latinam linguam.' (see <http://special.lib.gla.ac.uk/manuscripts/search/detaild.cfm?DID=42463>).

¹⁶ Semler mentions a *societas* of Isaacus Hollandus existing in 1592 and related to activities of Nicolas Barnaud; Johann Salomon Semler, *Unparteiische Samlungen zur Historie der Rosenkreuzer*. Leipzig, Georg Emanuel Beer, 1786, 115. See <https://amorc.nl/index.php?id=157&L=0&0=> for clearly mythopoetic elaborations (Isaac lived in 1592 and was copied by Paracelsus!). Christoph Gottlieb von Murr, *Über den wahren Ursprung der Rosenkreuzer und des Freimaurerordens [...]*. Sulzbach, Johann Esaias Seidel, 1803, 11, rightly calls this *societas* fictitious ('fabelhaft'). Copy: München BSB, digitized by google.

¹⁷ See supra, note 8.

¹⁸ See <http://www.minrec.org/libdetail.asp?id=616>

¹⁹ Julian Paulus, 'Hollandus, Isaac und Johann Isaac, Alchemisten'. In: Claus Priesner & Karin Figala, *Alchemie; Lexikon einer hermetischen Wissenschaft*. München, Verlag C.H. Beck, 1998, 181.

²⁰ Only Joachim Telle has paid attention to related subjects: Hartprecht (Telle 1986; see note 1) and Telle, 'Die "Hand der Philosophen". Zu einem Lehrbild der frühneuzeitlichen Alchimia-picta-Tradition.' In: Richard Caron e.a (eds.), *Ésotérisme, Gnoses et Imaginaire Smbolique; Mélanges offerts à Antoine Faivre*. Louvain, Peeters, 2001, 165-198, esp. 174-175.

²¹ Angelus Sala, *Chrysologia, seu examen aurum chemicum [...]* Hamburg, impensis Henrici Carstens, 1622, Sectio II, Cap. VI, f. K1r. Copy: unknown library, digitized by google.

²² In the Latin edition of 1600, this prologue opens Liber II.

²³ Later copists and editors have interpreted Saturn as antimony, which is the reason why Johann Thölde published the work with Basilius Valentinus, *Triumphwagen Antimonii*, Leipzig, Jacob Apel, 1604, 465-510. In the same year, the text was published anonymously, as 'Tractatus, darinnen das gantz Secret der Alchemey von der Stein der Weisen', in *Aurei Velleris oder der Gulden Schatz-*

und Kunstkammer, *Tractatus Quintus et Ultimus*. Basel, Jacob Treuw, 1604, 38-54. I have reasons to believe that Isaac actually meant lead, as I will explain elsewhere.

²⁴ This implies that it is not prepared with corrosives but with organic solvents.

²⁵ Michael Maierus, *Symbola Aureae mensae duodecim nationum* [...]. Francofurti, Antonius Hummius, 1617 [reprint ed. Karl R.H. Frick, Graz, 1972], 263-264.

²⁶ Melchior Adam, *Vitae Germanorum Medicorum* [...]. Haidelbergae, Jonas Rosa, 1620, 34; available at the excellent site

<http://www.uni-mannheim.de/mateo/camenahdocs/camenaref.html>.

²⁷ Gabriel Naudé, *Instruction à la France sur la verité de l'histoire des freres de la Roze-Croix*, Paris, François Julliot, 1623, 47 (misprinted as 27).

²⁸ Paulus (see supra note 17) mentions the ghost edition Prague 1572, created by Jorissen 1917 (see supra note 9) I, 308. Jorissen mistook a reference to a manuscript in Copenhagen (Royal Library, Old Royal ms. 1762, copied in Prague in 1572 from a manuscript owned by Bartholomeus Scultetus from Görlitz) in Otakar Zachar, 'Die Bedeutung der Holländer in der ältesten Geschichte der Chemie'. In: *Janus* 17 (1912), 335-356 or Otakar Zachar, 'Die Bedeutung der Holländi in der ältesten Geschichte der Chemie'. In: *Chemisch Weekblad* 10 (1913), 30-51 (same text). Bernadus G. Penotus (aut./ed.), [pseudo-]Philippus Aureolus Bombastus Paracelsus, *Centum quindecim curationes experimentaque* [...]. s.l. [Genève], Johannes Lertout, 1582. See Eugène Olivier, 'Bernard G[illes] Penot (Du Port), médecin et alchimiste' (ed. Didier Kahn). In: *Chrysopæia* V (1992-1996), 571-667, esp. 645-647.

²⁹ Johannes Isac [*sic*] Hollandus, *Das Dritte Theil des Mineral-Wercks* [...]. Frankfurt, Thomas Matthias Götz, 1666. Copy: Dresden, SLUB, <http://digital.slub-dresden.de/sammlungen/titeldaten/278467016/>. Johannes Isacus Hollandus, *Die Hand der Philosophen mit ihren verborgen Zeichen. Wie auch desselben Opus Saturni mit Annotationibus. Item, Opera Vegetabilia* [...]. Frankfurt, Thomas Matthias Götz, 1667. Copy: Dresden, SLUB, <http://digital.slub-dresden.de/sammlungen/titeldaten/278463312/>. See about the Hand Telle 2001 (see supra, note 21), 174-175; I fully agree that the Hand-treatise is probably spurious (i.e., not written by the author of the 'Isaac'-treatises in ms. London, Wellcome 359; see *infra*).

³⁰ In his Vorrede for *Die Hand*, 4. Shuh (see supra, note 16) says he is Benedikt Nicolaus Petraeus, but this seems very unlikely to me.

³¹ Isaacus Hollandus, *De Lapide Philosophico oder vom Stein der Weisen*. Franckfurt, Thomas Matthias Götz, 1669. Copy: Dresden, SLUB, <http://digital.slub-dresden.de/sammlungen/titeldaten/278463932/>

³² Certain errors and additions indicate that the German translation which Götz printed was made more than a century earlier, as they also occur in (e.g.) Leiden, Cod. Voss. Chym. F. 26, ca. 1567 (see *infra*).

³³ Isaacus Hollandus, sonst auch Flandrus genannt, *Curieuse und Rare Chymische Operationen* [...]. Aus einem alten Autographo Manuscripto heraus gegeben von R.H.C. Leipzig und Gardeleben, Ernst Heinrich Campen, 1714. Copy: München, BSB, digitized by google.

³⁴ Also in Latin, French, Italian and Czech, but it is obvious that none of these languages is the original. I intend to publish a (long!) list of manuscripts when I shall have seen as many of them as I can; for the identification of the texts, I will use the printed versions, as these are more readable and more manageable, though they probably contain later and/or non-*Isaacian material.

³⁵ Antonio Neri, *The art of glass*. Translated into English by Christopher Merret. Reed. by Michael Cable. Sheffield, Society of Glass Technology, 2004, note on Book V, chapter 75, 322-324.

³⁶ See Pieter Boer and Paul Engle, 'Antonio Neri: an Annotated Bibliography of Primary References.' Forthcoming in *Journal of Glass Studies* 2010.

³⁷ As far as I know, Wiegleb was the first who assigned a late date to Isaac Hollandus because of this passage in Neri; Johann Christian Wiegleb, *Handbuch der allgemeine Chemie*, 2nd ed. Berlin und Stettin, Friedrich Nicolai, 1786, Bd. 1, 130. Copy: Lausanne, BCU, digitised by google.

³⁸ A detailed and absolutely fascinating inventory of Ximenes' large house at the Meir (including an alchemy room and a great library) was drawn at the death of his wife in 1617 and published in Erik Duverger, *Antwerpse kunstinventarissen uit de zeventiende eeuw* Vol. I: 1600-1617. Brussel, Koninklijke Academie voor Wetenschappen van België, 1984, 400-461. Detail: the books in German are catalogued as 'Germanici', those in Dutch as 'Teutonici'.

³⁹ 'Amaus', in: E. Verwijs en J. Verdam, *Middelnederlandsch Woordenboek*. Eerste deel. 's-Gravenhage 1885, 386-387.

⁴⁰ 'Modus purificando et separando materiam a fecibus'; Dutch in ms. London, Wellcome ms. 359, f. II 129r-135r, esp. 133r-134r. Printed in Latin in Hollandus, *Opera Mineralia* (see n. 4), Lib. II, cap. 81-95, 339-354; in German in Hollandus, *De Lapide* 1669 (see n. 31), 144-157 and Hollandus, *Operationen* 1714 (see n. 33), 110-125.

⁴¹ Online at <http://diglit.ub.uni-heidelberg.de/diglit/cpg220>

⁴² W. Ganzenmüller, 'Glastechnisches aus einem "Kunstbuch" des 16. Jahrhunderts.' In: *Glastechnische Berichte* 14 (1936), 321-326.

⁴³ Ms. London, Wellcome 359, f. III 17v: 'en versmaet die asche niet die onder staet/ want daer in is een costelycken diamant en maecht/ welke maecht sal begort worden met vruchten/ en dan sals voortbrengen den sone des levens. Dat sal wesen. Mijn kindt als men dat ferment sal mengen/ mit dese witte aerde soe ontfanct die eerde oft dat onvulkomen lichaem dat ferment. En dan wordt die maecht begort.' ('Do not despise the ashes at the bottom, because they contain a precious diamond and a virgin, which virgin will get pregnant with fruits, and then she will produce the son of life, which will be, my child, when the ferment will be mixed with this white earth, then the earth or the imperfect body will receive the ferment, and then the virgin gets pregnant.') Latin: *Opera Mineralia*, Middelburg 1600, II, cap. XXVI, 277.

⁴⁴ Voss Chym F. 26, f. 136r: '...ein macht/ welche macht soll umbgurtet werden mit fruchten' ; *De Lapide philos.* 1669, 49: '...eine Magd welche umgeben sol werden/ mit Früchten/ und sol bringen ein Sohn des Lebens.' *Curieuse und Rare Chymische Operationen*, 1714, 54-55: '... eine Macht, welche Macht soll

umgärtet werden mit Früchten, und darnach soll sie bringen einen Sohn des Lebens, das soll sein mein Kind. Als man das Ferment soll mengen mit der weissen Erden, so empfänget das imperfecte Corpus das Ferment, und dann wird die Macht begehrt'.

⁴⁵ My thanks are due to Didier Kahn for drawing my attention to Philipp Redl, 'Aurora Philosophorum; Zur Überlieferung eines pseudo-paracelsistischen Textes aus dem 16. Jahrhundert.' In: *Daphnis* 37 (2008), 689-712. But my point here with the *Aurora* is slightly different from Redl's conclusions.

⁴⁶ This part of the *Mineral Work* is found twice in Ms. Wellcome 359: in German (anonymous, without the prologue, abridged) on f. I 13v and (adjacent) II 1r-7v); in slightly germanized Dutch, ascribed to 'Isac', on f. 118v-128v. Printed in Latin in *Opera Mineralia* 1600, Lib. II, cap. 51-80, 313-339 (also in *Theatrum Chemicum*, vol. III). A different Latin translation was printed in *Alchymia Vera, Das ist: Der waren und von Gott hochgebenedeyten/ Naturgemessen Edlen Kunst Alchymia* [...] (s.l.s.a., ca. 1604-1620; see Joachim Telle, 'Alchymia vera (1604).' In: H.-G. Roloff (ed.). *Die deutsche Literatur. Biographisches und bibliographisches Lexikon*. Reihe II: *Die deutsche Literatur zwischen 1450 und 1620*. Abt. A: *Autorenlexikon*. Vol. II. Bern, Peter Lang, 1991, 84-86); copy of the second edition in Halle, Universitätsbibliothek, <http://digital.bibliothek.uni-halle.de/hd/content/structure/293434146-183>.

Stahl admired the work and added the Latin translation from *Alchymia Vera* to a work of his own: Georg Ernst Stahl, *Fundamenta chymiae dogmaticae & experimentalis* [...]. *Annexus est ad Coronidis confirmationem Tractatus Isaaci Hollandi de Salibus et Oleis Metallorum*. Norimbergae, heirs of Wolfgang M. Endter, 1723, 237-255. Copy: München BSB, digitized by google; many later editions. Printed in German in Hollandus, *De Lapide Philosophorum* 1669, 125-144; *Curieuse und rare Operationen* 1714, 86-110, and anonymously in *Chrysopaëia Schwærtzeriana* 1718 (see *infra*, n. 63), 153-163.

⁴⁷ The three 'Isaacian' pseudo-Roger Bacon treatises deal with the tinctures of gold, antimony and vitriol respectively. The first was first printed in Paul Hildenbrandt von Hildenbrandseck, *Auriferae artis Das ist, Der Goldkunst* [...]. Frankfurt am Main, Nicolaus Bassaeus, 1597, attributed to Roger Bacon. The treatise on antimony was first printed, with an attribution to Paracelsus, in Jonas Kitzkat, *Speculum Alchymistarum; darinnen eines erfarnen Laboranten Philosophische description lapidis* [...] Zum Hof, Matthaeus Pfeilschidt, 1583. The treatise on vitriol was first printed anonymously in *Aurei Velleris* V, 1604 (see *supra*, note 23), 73-88. Joachim Tancke was the first to print all three of them together, with some other (pseudo?)-Baconian texts, as Roger Bacon, *Medulla alchemica, das ist Vom Stein der Weisen / und von den vornembsten Tincturen des Goldes / Vitriols und Antimonii* [...]. Eisleben, Jacob Apel, 1608.

⁴⁸ At the moment I am inclined to think that the German *Aurora* quotes a 'pseudo-Roger Baconized' version of Isaac; I hope to find more details in some important manuscripts of the 'Isaacian' Roger Bacon-treatises.

⁴⁹ I hope to give elsewhere a more detailed account of the reasons why I think so.

⁵⁰ See Annelies van Gijsen, *Joos Balbian en de steen der wijzen; de alchemistische nalatenschap van een zestiende-eeuwse arts*. Leuven, Peeters, 2004, 121-130.

⁵¹ Duverger (see supra, n. 35), 458, in a list headed ‘Manuscripta in genere’. So it is unclear whether this was a manuscript in Dutch, in Latin or in another language (though the attribution to Johannes Isaac suggests that it was in or from the Latin, as I will explain elsewhere).

⁵² I owe a great debt of gratitude to Ms. Drs. Noor Versélewel de Witt Hamer (Geldrop, Netherlands). A codicological description of London Wellcome ms. 359 was part of her unpublished master’s thesis (Utrecht University, 2005) on the Dutch *Donum Dei* in this manuscript; it was a great help to me that she also scrutinized the Leiden and Utrecht manuscripts and supplied me with a description, transcriptions, and a dating based on the watermarks.

⁵³ Addition of an uncertain date, but definitely before 1716; see *Catalogus Librorum Tam Impressorum Quam Manuscriptorum Bibliothecae Publicae Universitatis Lugduno-Batavae*. Curâ et Operâ Wolferdi Senguerdii [...], Jacobi Gronovii [...], et Johannis Heyman [...]. Lugduni apud Batavos, Petrus Vander Aa, 1716, p. 365.

⁵⁴ This title is based on the division of Hollandus, *Opera mineralia*, Middelburg 1600, in two books.

⁵⁵ By error, f. 47v-48r (in a series of additions, on f. 45r-59v, to the preceding ‘Elixir philosophorum, or lapis compositus’) bear a header ‘Quinta essenti/ vanden cruyden’ (‘Quintessence from herbs’) which might refer to a theoretical part of the vegetable work, not copied in this manuscript.

⁵⁶ S.A.J. Moorat, *Catalogue of Western Manuscripts on Medicine and Science in the Wellcome Historical Medical Library*. Vol. I: *Manuscripts written before 1650 A.D.* London, 1963, 229 (the year 1563 occurs on f. III, 61v). A marginal note on f. II 129v mentions 1567.

⁵⁷ The very interesting exception is the ‘Rupescissan’ antimony treatise, Dutch in Leiden UB Voss. Chym, Q 37, f. 34r-36r and in London Wellcome 359, f. II 98r-102v as ‘De Saturno philosophorum / opinor Isaac’, which was printed in Latin and anonymously in Penot 1582 (see supra, n. 25), 76-80. The Dutch text is better, and is explicitly related to several other texts in the Leiden manuscript.

⁵⁸ Dutch in London, Wellcome 359, f. II 141v; Latin in *Opera Mineralia* 1600, Lib. II, cap. 111. The German text in Kassel, Landesbibliothek, Quarto Ms. Chem 8, (now) the second item (1574) in convolute, f. 29r has ‘im Wercke Vegeta: das 3 und 12 Capittel’. Some variant titles of this treatise are ‘The Foundation of the Art’, ‘The (or: A) Work of Twelve Months’ and ‘A process through the bodies of Sol, Luna and Mercurius’.

⁵⁹ See Hartprecht’s preface in the *Opus Vegetabile*, 1659, 5 and the anonymous translator in the preface to the *Dritte Theil*, 1666, 4.

⁶⁰ Utrecht UB, ms. 708, f. 5v; London, Wellcome Ms. 359, f. II 108r; *Opera Mineralia* 1600, 304; *De Lapide philosophico* 1669, 124; *Curieuse und rare Operationen* 1714, 85.

⁶¹ Unfortunately, Moorat 1963 (see supra, n. 56) has catalogued the manuscript as 'Hollandus (Johann Isaac) [& others]' without mentioning the fact that this name was added by a later hand.

⁶² This is what Sudhoff 1934, 45 has; the manuscript is Copenhagen, Royal Library, Old Royal Ms. 241, which I have not yet seen; Adam McLean has 'Liber Isaaci Flandri [Hollandi] de mineralibus'. See

<http://www.levity.com/alchemy/copenhgn.html>. (The preceding Ms, Old Royal 240, has 'Isaac Holland' added in a later hand, but judging from the description in Bäcklund this is not Isaac but Ewald Vogelius alias Theobaldus de Hoghelande. See Jan Bäcklund, 'In the footsteps of Edward Kelley.' In: Stephen Clucas (ed.), *John Dee: Interdisciplinary Studies in English Renaissance Thought*. International Archives of the History of Ideas 193. Dordrecht, Springer, 2006, 295-330, 310.

⁶³ This manuscript, once owned by Sebald Schwärzter (d. 1598), contains a very substantial part of the mineral work of *Isaac in German (f. 113-f. 269v), only it is anonymous, and this is followed by a treatise on projection by 'the excellent philosopher Isaac' and some other *Isaacian material (f. 270-318). Voss. Chym. F 11 was probably copied from this manuscript. Sebald was very fond of this text, witness *Chrysopœia Schwärzteriana. Das ist: Sebaldi Schwärzters, ehemahligen berühmten Churfürstl. Sächsischen Artisten und würcklichen Adepti, Manuscripta, von der wahrhafften Bereitung des Philosophischen Steins, wie selbige vor diesem mit seiner eigenen Hand entworfen, und bey dem Chur-Fürstl. Sächsischen Hause in Originali verwahlich aufbehalten worden, Nebst dem rechten zu solchen Manuscriptis gehörigen Schlüssel; Auch unterschiedlichen Abrissen der darzu dienlichen Ofen, aus einer unverfälschten durch viele Mühe und Unkosten erlangten Copia nunmehr jederman vor Augen geleget, und mit einigen nützlichen Anhängen von verschiedenen curieusen Processen vermehret*. Hamburg, Samuel Heil, 1718. Many of the procedures (especially those on 5-44) described by Sebald for Elector August of Saxony were taken from Isaac. Sebald was unaware of the fact, but mentions a 'special book' as his source, and respectfully refers to its author as 'the master'.

⁶⁴ In the anonymous part, the reader is referred to a treatise on projection; the scribe (not Sebald) notes: 'Might be the text which follows', f. 156v.

⁶⁵ Copenhagen Royal Library, Old Royal ms. 1762; see supra, note 25.

⁶⁶ Only the Vorrede of the *Dritte Theil* 1666, 5-6 gives some information on Hollandus' life and dates, but the anonymous spokesman who informed the equally anonymous translator is very vague and does not sound very reliable.

⁶⁷ Unfortunately, this made Moorat 1963, 229 ascribe all the Isaac texts in Wellcome 359 to 'Johannes Isaac Hollandus'.

⁶⁸ *De Lapide Philosophorum* 1669, 66-70; *Curieuse und Rare Chymische Operationen* 1714, 210-213.

⁶⁹ Karl Sudhoff, *Versuch einer Kritik der Echtheit der Paracelsischen Schriften*, Theil 2: *Paracelsus-Handschriften*, Bd. 1, 219, no. 75. Sudhoff decided that the texts in this ms. were certainly not written by Paracelsus.

⁷⁰ Lee Stavenhagen, *A Testament of Alchemy, being the revelations of Morienus [...] to Khalid [...]*. Hanover, New Hampshire, Brandeis University Press, 1974,

18 n. 21; cf. Laurentius Ventura, *De ratione conficiendi lapidis philosophorum*, in *Theatrum Chemicum*, ed. 1659, vol. 2, 233: ‘Daucim philosophus in Morien.’ Ruska assumes that the ‘Dantinus’ mentioned in the *Consilium Conjugii* is taken from Morienus; see Julius Ruska, *Turba Philosophorum. Ein Beitrag zur Geschichte der Alchemie*. Berlin, Georg Reimer, 1931, 344.

⁷¹ Utrecht UB, ms. 708, f. 5 v (the temperature of the furnace will be fine if you can keep your hand inside for half a Hail Mary) ; London, Wellcome ms. 359 f. II 90r (distill until the time between two drops will be one or two Lord’s Prayers); *ibid.*, f. II 156v (increase your fire till you can just keep your finger in the ashes for a Hail Mary), f. II 159r (a temperature at which you can easily keep your hand in the furnace during a Lord’s Prayer- the abbreviation, ‘pr nr’ (for ‘pater noster’), has become ‘two hours’ in the translation in Kassel LB ms. Chem. Qu. 8, f. 44r).

NOVATORES OR ALCHEMISTS? A SPANISH HISTORIOGRAPHICAL PROBLEM

MIGUEL LÓPEZ PÉREZ,
SPANISH SOCIETY FOR THE HISTORY OF ALCHEMY

Introduction*

During the last four decades, the history of Spanish Science has had as a central tenet the existence of an innovative movement at the end of the seventeenth century. This movement was most notable in the biological and medical sciences and was led mainly by a group of physicians who defended the introduction of modern medical doctrines, such as chemical medicine. These reformist physicians are known as *Novatores*.¹

But not all physicians wanted reform. Historians of science have categorized physicians into four groups during this period. This division has certainly improved our understanding of the status of the medicine of the period². The first group is composed of those intransigent physicians who followed Galen's orthodox tradition; they uncompromisingly defended so-called dogmatic medicine and held the majority of university chairs in medicine. This helped them maintain official positions of power, although, as Lopez Piñero suggested, they did not have significant public support. This lack of broad support might lead one to imagine that conservative dogmatists were at a disadvantage when compared to their modernizing brethren. But the politician and charlatan Luis de Alderete y Soto³ and his followers—such as Juan Vazquez de Cortés, a physician of Seville—fared much worse; they may have enjoyed varying levels of public support but were subject to intense attacks from dogmatists.⁴

The second group consists of “scientists of moderate traditionalism”, such as the physician of Madrid Joan d'Alos (1617-1695) and the Italian physician Pedro Auenza (1650-1705).⁵ They embraced compromise and were receptive to a number of new ideas, but they remained largely loyal to Galenism. They sought to accommodate new ideas to classical medical principles.

The third group would be the *novatores* themselves. Many of them emerged from the second group—those who sought to accommodate new ideas to traditional Galenism—at least as a development *ad extremum* of their positions. Galenists and *novatores* were separated by the quality of their education. *Novatores* were mostly *revalidados* (re-validated); this means that they did not have the advanced medical training that would allow them to hold positions as university professors. This put them at a disadvantage. University doctors were the strongest supporters of Galen's theory, while *novatores* were mere medical craftsmen, focusing on anatomical and therapeutic practices. These differences were highlighted by some members of the orthodox group, such as Alonso López Cornejo, university *Profesor de Prima* at Seville during the last years of the seventeenth century.⁶ Their attacks were soon answered by Miguel Ximenez Melero.⁷

Finally, the last group was the so-called “Extracurricular Scientific Subculture”. Its importance is due to the fact that it had a prominent role in the dialectic between tradition and modernity. Sometimes holding views very similar to those of novatores, most of its representatives were people such as Luis Amigó y Beltrán, Luis de Alderete y Soto and Juan de Vidos⁸.

This is the scheme offered by Spanish historiography. However, it appears from a more careful study of the texts that this scheme contains several important distortions and mistakes. One of them is that historians have sometimes relegated medical practitioners that were known in their own day as *novatores* to the position of “extracurricular scientific subculture”. In other words, during the seventeenth century, people did not always distinguish clearly between *novatores* and “extracurricular” practitioners. They simply saw alchemists, defenders of chemical medicine, swindlers, gold-makers, charlatans, and more, as part of a systematic attack against Galenism on the behalf of chemical medicine.

Some preliminary considerations.

There are still several doubts about *novatores*. For example, we do not know their origin, their influence at the Court, nor if they had any self-consciousness as a group, nor do we know what their internal relationships were. It is striking that what we know of them comes, in most of cases, from the disputes generated by their ideas. Information reaching us stems from detractors, and less from the proponents themselves. However, we know that they were called *novatores* by people from outside of their group. This had been the case since at least 1687, when one of their

opponents, a bachelor of medicine, Justo Delgado de Vera, wrote the following against Luis Alderete y Soto, whom we would call an alchemist today:

De suerte, que el Agua de oro purissimo, u oro potable, Agua de Vida, y Agua de Vino (que es el espiritu) y el agua ardiente rectificado, es vna misma cosa, en sentir de Arnaldo, de que se saca, y deduce, quan facilmente le citan por su Agua de Vida los presentes Novatores.⁹

We do not know if the word *Novator* was used before this in Spain. However, we know that in the first half of the 17th century, Johann Freytag (1581-1641) had called Paracelsians *novatores*, and he did so in a way that foreshadowed the use of the word in Spain a few decades later.¹⁰ Delgado's terminology is generally considered to have referred to members of the *extra-academic subculture* (alchemists, charlatans...); yet these people were seen as *novatores* by their contemporaries, as witnessed with Alderete y Soto. They were strongly related to Paracelsus and his ideas, a fact that they and their opponents made obvious, all the more since the latter used it as an offensive weapon. We do not understand very well the specific reason of this claim to Paracelsianism.

Paracelsus may have already been an anachronistic character, but one who still fascinated the *novatores*. It is common to find similar examples of anachronism in other fields, attached to similar shows of admiration. In the present case, opponents saw this attraction as grotesque, coming as it did more than a century after Paracelsus' time. *Novatores* were attacked precisely for this Paracelsian attitude, and these attacks were successful. But we must remember that both Paracelsus' remedies and those of his followers, as was the case of Leonardo Fioravanti, had been included in the collections of therapeutic remedies and Pharmacopoeias. These remedies had been perfectly accepted. We can find them everywhere; for example:

1. "Electuarium Leonardi Fioravanti contra pestem: rad. Alth. tb ij, enula, 3iiij, imperatoria, tormentill. An 3j. mi. In vino albo optimo dulcique ad consumptionem vini coquantur, piestentur & per setaceum triiciantur. Mucilaginis transmissa mellis conti & despumati an tb, ij. succi cuyton, tb. J. pulp. Dactilor, 3 vi. Misceantur omnia & f. electua."¹¹

2. "De Emplastro alio Fodicorum, es Theophrasto Paracelso, de bermibus [...] R. Galbaní. Oppoponacis, ana. Unc, 1. Ammoniacy, edelij, ana, unc.2."¹²

Justo Delgado de Vera, an opponent to Alderete's ideas, acknowledged his affiliation to a medical school that he called *Escuela Médica y*

Philosophica Racional, or *Medicina Racional Christiana* (*Philosophical-Rational Medical School* or *Christian-Rational Medicinal School*), and this school held the dominant place, he said, within Hispanic medicine. Here is how he describes its qualities, listed in an obvious effort to identify precisely what the *Novatores*' group lacks:

Que no es la comunidad de la Escuela medica, y Philosophica Racional, tal que abandone baxamente con estilo amargo, y inundo su nobleza, limpieza, decencia y gravedad heredada por legitima sucesion de Dios, de sus Angeles, de sus Santos, y de varones ilustres, que tomo el Altisimo por organos para enseñarla (como se probarà) à los hombres por alivio, consuelo y remedio de sus miserias.¹³

What he says about apothecaries and the state of therapeutics is also worthy of note:

Los Boticarios saben quanto ay que saber de la Pharmaceutica Spagirica Racional; porque esta Arte es la que propriamente se llama Separatoria, con que los remedios se preparan, y purifican, para que purgados se sus impurezas, se apliquen mas esenciales, y activos; assi la definen los mismos Spagiricos. *Est ars corpora naturalia mixta solvendi, & soluta coagulandi; ad medicamenta gratiora, salubriora & ratiiora consinanda*. Y pues su fin es para preparar mejor los remedios; à solos los Pharmacopeos pertenece. Sus operaciones genéricas son dos, dissolver, y congregar. Las especificas son muchas, refierelas Senerto tom. I. tract. de consensu & dissensu, Galen cum Chim. cap. 19. fol. 274 y son estas, separación, purificación, exsicacion, vstion, calcinacion, sublimacion, resolucion, extracciõ de essencia [...] no sabe tantas el Licenciado, ni su Amigo, pues todas estas saben mucho los Boticarios de estos tiempos, y los más quasi todas ellas; lo qual basta para ser buenos operarios, como se lo darán a entender siempre que quisieren aprender lo que ignoran; porque ya está muy dilatada, y escrita la Pharmaceutica Spagirica, o Chymica, haziendola racional, esto es, dando razón de lo que obran...¹⁴

According to Delgado de Vera, the spagyric art had come into Spanish therapeutics long before. But, as we describe below, the overly strong position we see here concerning chemists did not correspond to the real situation, and what Delgado wanted was a defence of pharmacists. Furthermore, he says that spagyric experiments were conducted and perfected. His operations were explained and the preparation of medicines and remedies had conceptual support and were accepted by *rational* medicine. If by 1687 we can read about support and acceptance of spagyric medicine, it seems logical to assume that its initial *embrace* came a few years earlier. The year 1680 seems a fairly conservative estimate for these early stages of acceptance. This is truly amazing. Only thirty-seven

years before, Esteban Villa, in his *Libro de simples incognitos en Medicina* (1643), declared that physicians must accept the benefits of chemical medicine, implying that they had not accepted it. The present study explores the circumstances that gave rise to this rapid and fundamental change.

The period that concerns us, which covers at least four decades, is one of the lesser known in the development of the relationship between alchemy, therapeutics, and health. We do not have sufficient data to develop fully a sequence that goes from one extreme to another. The origins of a medicine that combined elements of rational and spagyric practices were evident in 1680. But changes did not happen overnight. For example, the practice and perfection of chemical and spagyric medicine was to be the main task of the Royal Society of Medicine of Seville when it was founded twenty years later (1700). Thus, we should ask ourselves: what was *really* new about this Society, beyond the institutionalization of this new experimental tradition? By trying to answer this question and tracing the conflicts between Galenic and chemical medicine, we can see a possible explanation of how chemistry started on its own path in Spain.

To begin with, the dissemination of texts dealing with alchemical and chemical practices—be it new editions of old texts or new works as well—influenced the processes by which experimentation was improved in Spain. In addition to texts, we have solid information concerning the practitioners themselves: physicians with access to European innovations. In 1680, if a physician was interested in chemical medicine, how to make potable gold, Llull's *water of life*, or an alchemical remedy, an abundant reading material was available to him. He could learn all that had been said on the subject from the previous century until his own days. He could read Paracelsus and Arnau; Lull and the French spagyrist¹⁵; the first *medico-chymicos* and alchemists. If, for example, a physician wanted to learn how to make sublimate mercury, he would find it much easier than it would have been a century earlier. But he would also face a problem: there was frequently no consensus among the authorities he might consult. Differences of opinion would leave him with two choices.

The first would be simply to follow the course of action that he deemed best, relying on the most convincing theory. In this respect, theoretical and ideological concerns would guide him. Second, he might ignore differences of opinion, and focus on making the desired product; in other words, he might set aside theoretical concerns and focus on praxis. It was possible that, having many options at his disposal, our physician did not consider the position of each author; instead, he might be more interested in pragmatic aspects of the production of mercury sublimate

than in the intellectual quarrels that sometimes accompanied practical instruction. If this were true, our physician would give more weight to the practice than to what we might deem the “intellectual coverage” under which the sublimate was produced. This approach became widespread. In fact, many physicians were not polemicists but rather they were eclectics. They witnessed the rise of chemical medicine and accepted its presence as well as that of other methods as a part of their science, nothing more. This generalization would automatically lead to weaken the authority of the classical medical principles, the above-cited *coverage*. The final result would be the weakening of dogmatic and axiomatic medicine in 1680. The question was simply whether chemical medicines were more efficacious than Galenic remedies, without any concern on theoretical issues of this debate.

It is during this lack of coverage that we should situate the emergence and rise of *novatores*, and the reason for their uprising. This case was not unique in Spain. Traditional and official medicine was outstripped by chemical medicine. Its postulates, sometimes defended with excessive force, became less valid than before. Only a new, persuasively articulated position could satisfy physicians that had serious doubts regarding chemical medicine. When a new idea could give coverage to practical problems, such problems would disappear. This took time. When it did happen it did not affect all of medicine, but more specifically those areas related to chemistry. With Boyle, Lavoisier and Stahl and their new ideas, medicine and chemistry were finally differentiated and presented as two equal sciences.

This situation is easier to understand if we illustrate graphically the schools of thought to which a physician might have access during the late 17th century (we discuss the extent to which these references were used below). We have inserted a table with all of the different choices that could be referred to for mineral treatments, not including metallurgists and focusing on therapeutics.

Table 1. Possibilities of influence (1680-1700).

Possibilities	Alchemy	Paracelsus	Paracelsists	Spagyric	Medical chemistry
1					
2					
3					
4					
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Let us consider some examples. Juan Guerrero, physician at Madrid, and considered as a moderate Galenist by Spanish historiography, was guided himself by the reading of alchemists such as Pseudo-Llul and Sendivogius, by spagyrist such as Jean Beguin, and by *chymico-medicos* such as Johannes Hartmann (1568-1631)¹⁶. All of them were quoted in his *Sol de la Medicina*¹⁷. Guerrero even translated Christophorus Parisiensis into Spanish. He is a model of the number twenty in the graph above, showing the influences of alchemy, spagyric and chemical physicians. It is very strange that he did not reject those who practiced *chimicae ars*, but only those who did not show great skill in this art; he supported the search for better knowledge of the preparations and how it might be obtained:

Y assi, quando los medicos han censurado y dicho mal de los chymicos y chymica no han calumniado los scientificos, pues fuera dezir mal de si, sino los alchimistas impostores, pseudochimicos embusteros que lo que obran lo hazen sin methodo y por apresurarlo sin la debida purificacion, y assi ministrandolo se cometen dos mil yerros, como cada dia experimentamos, que no ignora el hecho de lo que ello es y la distincion que ay y debe aver entre lo malo y lo bueno, esto para estimarlo y aquello para vituperarlo, y assi ay remedios y artifices que conviene y es del servicio de ambas majestades quitar el uso a sus medicinas antes que se publiquen: Bonus & dignis consultum, volumus non malis & indignis dize Christophoro Parisiense en su libro de la Piedra Filosofal traduzido por mi en París año 1660.¹⁸

Luis de Alderete y Soto, inventor of the famous *Water of Life*, may be an example of possibility number twenty-five above, since he seems to have been influenced by alchemists, such as pseudo-Lull, or Sendivogius, Paracelsus, spagyrist and chemical physicians.¹⁹ Also, Juan de Cabriada betrays influences of all types, being a clear example of the possibility thirty;²⁰ the spagyrist Juan del Bayle (according to Spanish historiographic typology) can be classified as *chymico-medico*, according to possibility number fifteen; Luis Amigo y Beltran seems to have been influenced by alchemy, Paracelsus and Paracelsians, exemplifying possibility number sixteen. We could fill in the table with other names, such as Juan de Vidos, Julio Maria Rossi, Gerónimo de la Fuente, Buenaventura Angeleres, and other well-known figures from the period.

Being not content with classifying the influences that largely defined the major players in the *Novator* movement, we should also consider: the public dimension of polemics in which they were engaged; the fact that much of the polemic associated with medical controversies of the day took the form of epistolary literature and dialogue; the points of coincidence and similarity in the writings of authors supporting opposing positions; the

common desire to acquire political and institutional power; the diminished authority of the *Protomedicato*; the general discredit of medicine; the different conceptions of the place spagyric medicine should have in general medicine; and, finally, the status of the apothecaries.

As for the public dimension of the controversies, there was a steady stream of publications advocating particular approaches to medicine; it was almost always followed, shortly thereafter, by leaflets attacking the advocated approach. Whether in publications advocating or attacking a particular position, the stated intent of authors was to serve the public good. For example, Andrés Gámez (? -1710)²¹—a connoisseur of Hippocratic and Galenic medicine, but also of Hermetic philosophy and chemistry²²—remarked that both chemical and Galenic medicines were valuable to the public. This was the main reason for the existence of these texts:

(...) y cualquiera que la leyere no podrá dexar de confessar la grande erudición, y noticias del Autor, la modestia con que le ha escrito, la verdad de lo que propone, las razones eficaces con que lo prueba, y el beneficio que de todo resulta al bien comun, cuya utilidad principalmente pretende (...)²³

A follower of Alderete's provides an even clearer example. This physician, named Vicente Pérez, got the official charge of "Physician of the Water" (Médico del Agua) in the 18th century. He claimed that water was the universal remedy.²⁴ This was met with incredulity and sarcasm; as happened to his teacher Alderete, Pérez was ridiculed in a pamphlet in verse.²⁵ The titles of many of the works related to medical polemic hint at the genre in which they were written. Be it *Discursos*²⁶ or epistolary prose (*Cartas y respuestas*),²⁷ *papeles*,²⁸ *diálogos*,²⁹ or *exámenes*,³⁰ these genres are all relatively short, and few go beyond one hundred pages. For the most part, few major medical textbooks are published during the period; most are new editions of older texts, accompanied by a number of surgical texts,³¹ or texts for apothecaries, such as Jerónimo de la Fuente Pierola, Luis de Oviedo, and Juan de Vidos.³² In fact, even in 1678, the apothecary of Salamanca, Bartolomé Nieto, had among his books old copies of Oviedo, Mesue or Esteban Villa.³³ In addition, the use of familiar, even outdated texts was common; even those who made use of them complained:

Estamos en tiempos en que hasta la Verdad, tiene emulos que la pretenden, sino ofuscar, a lo menos, deslucir, sin que le valga ser clara como el Sol, y solida como si misma, para que no se le atrevan osadas nubes, y atrevidos

impulsos. Que hará pues quando las ojas de el papel, se le atreven como azerados filos para herirla?³⁴

If both moderns and traditionalists drew on the same stock of literary genres, it is also true that the arguments of both parties—even the arguments of bitter enemies—were often quite similar. Exemplary in this respect are arguments about experience. Cabriada, Alderete, and many other moderns argued the importance of experience, while their opponents did the same. Moderns tended to refer to clinical experience and traditionalists to the fact that Galenism had been tested over centuries. It was also routine for both groups to draw on the same medical authorities. Thus Sennert, for example, was used by both. We also see the same with such figures as Arnau de Vilanova, Rupescissa, Ramon Llull, Pierre-Jean Fabre, Pietro Andrea Mattioli, Jean Beguin, and many others.³⁵ The same words were used by detractors to show that spagyrics was only a branch of therapeutics and, by extension, of medicine:

Convento también con el Licenciado, en que por el Arte Espagirica, ò Separatoria (que se exercita principalmente con la destilacion) se saca racional, y philosophicamente de todo mixto varias aguas destiladas, licores, elixires, azeytes...³⁶

On the other hand, the same words were the perfect argument for the integrity of spagyrics as a discipline on its own, totally different from official Medicine. But increasingly, medical theory drew upon the authority of experiment. Experimentation and experience were also weapons common to both camps. For Galenists, there was no better measure of experience than the fact that Galenic medicine had been validated over the course of many centuries. It was, therefore, immensely more legitimate than any chemical remedy, according to Galenists. But we know that classical remedies were powerless over the plague, or *morbo gallico*, for example,³⁷ and that some chemical remedies nearly led to the death of members of the Spanish Court.³⁸

Another common element was the idea of the commonwealth, a *mandatory* feature for medicine. What kind of medical school best defended this concept? Both sides wanted to be the standard bearers of the public good. Physicians used the concept of *Tyrannizing-by-Health*, as we can see in the fifth objection to Alderete's Water of Life:

Objeciones que pone al escuela de Galeno al Agua de Vida, aunque se le ha convencido con algunas experiencias hechas por médicos de su profesión: [...] Que en la Pragmatica hay clausula para que no se use la

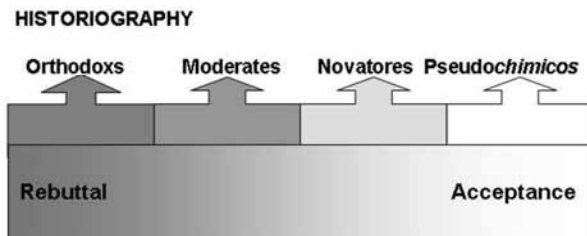
Medicina que no la sepa el Protomedicato porque no se vendan secretos y se tiranize la salud.³⁹

It is difficult to distinguish clearly between alchemy and chemistry, especially during the 17th century. It is less complicated, however, to differentiate practitioners of the former from those of the latter. It is also true that many of those that we have found talking about *chimico-medical*⁴⁰ issues did so with a startling lack of knowledge; these were called false chemists, *pseudochimicos*, and so on. In the case of so-called Galenists, it is worth asking at what point they may be identified as believers in rational *medicine*. May we call “moderate Galenists” those who can be presupposed by us—based on their interest in the new *chimica*—to be supporters of chemical medicine? In fact, we see that some of those known by Spanish historians as orthodox Galenists knew and read texts of chemical medicine. The fact that they read these texts does not imply that they accepted chemical medicine; but, in both cases, we find that, at least, they knew of its existence. That is to say that the opposition of Galenists to the use of chemical medicine does not necessarily imply ignorance of chemical medicine.

This was what happened with the so-called hardliners or *intransigentes*. And, perhaps, many moderate Galenists only differ from their orthodox counterparts in that they were convinced by the ideas they read on chemical medicine, in whole or in part. Cabriada might have had more success in his defence of chemical remedies if it were reinforced, for example, with letters from witnesses defending his position, as happened elsewhere in Europe.⁴¹ Furthermore, we are dealing with a two-decade period. That is, an orthodox physician could become moderate, by reading texts or by corroborating his readings through experimentation. The easiest thing to do would be to lump all Galenists together. But if we wanted to draw upon the differences that differentiated them internally, even in the most subtle nuances⁴², we would have to recognize no less than five different types of Galenists. The problem is the same for *novatores*. As we have said before, they never thought of themselves as a group; some figures, such as Alderete, were considered *novatores* by their contemporaries, but are not thought of as such by historians today (Alderete is often considered a fraud). This kind of puzzle prompts the question: were *novatores* more involved in alchemy and/or chemistry than moderate physicians or pseudo-chemists? Were they legitimate players or quacks? All these questions point toward the fact that although it might be easy to divide practitioners into two competing camps—Galenists and non-Galenists—a dichotomous division would not accurately capture the real situation in late 17th century Spain. Therefore, we are inclined to

establish a continuum, as we can see in the Galenist-*chimico* Matthias de Beinsa, who, using Galenic postulates, praised *chimica*. This is best seen, again, in a table:

Table 2. Spanish history of science medical division in late 17th century Spain.



As we have hinted, even among Galenists, there was no consensus on certain issues, making it impossible to characterize them as a kind of uniform wall of opposition to modernization. A classic case of theoretical dispute within the Galenist side involved the controversy over the implementation of purges and bleeding, their use, and primacy in curing some diseases. This dispute involved three protagonists and focused on Zaragoza during 1680's. An unknown "Lover of Truth" published a paper against the physician Francisco Elcarte and his book *Statera medicinae* (1687),⁴³ involving Jose Casalet, a professor of Prima.⁴⁴ Another case happened around 1670 between Thomás de Murillo and Agustín Gonzalo Bustos de Olmedillo in Madrid.⁴⁵ In this case, King Charles II's physician Juan de Chavarri stood for Murillo, as well as Juan de Ambrosio, King's Chamber physician. We must remember that bloodletting was very usual in those days: In 1669, among 8.856 patients treated at the Madrid General Hospital, 7.583 (85 %) of them were fixed by bloodletting.⁴⁶ In fact, even orthodox Andrés Dávila y Heredia spoke about metals with such precision that we must assume he had at least limited experience working with them. We give here a table in which the characters identified by José María López Piñero are separated by type.⁴⁷ And we have underlined those who had knowledge of the *ars chemica*. This shows that the majority of them had this knowledge. On the other hand, this table underscores one of the elements of our hypothesis, according to which alchemy and its operational methods (e.g. distillation) and concepts (e.g. *metallogenesis*) were much more widespread in medicine than has been usually noted.

Table 3.

ORTHODOXS	MODERATES	NOVATORES	ALCHEMISTS
	<i>1658 Caldera de Heredia</i>		<i>1658 Jacinto Beltrán</i>
	<i>1660 Gerónimo de la Fuente</i>		
	<i>1662 Bravo de Sobremonte</i>		
	<i>1665, Pedro M. de Heredia</i>		
		<i>1674 José L. Casalete</i>	<i>1674 Juan de Vidos</i>
1677 Matías García			
	<i>1679 Juanini</i>		
	<i>1680 Juan Guerrero</i>		<i>1680 Luis de Alderete, Matias Beinza</i>
<i>1681 Andrés Dávila y Heredia</i>			
	<i>1682 Andrés Gámez</i>		<i>1682 Amigó y Beltrán</i>
	1686 Tomás de Longás	<i>1686 Juan de Cabriada Dionisio de Cardona</i>	
	1687 Luis Enríquez de Fonseca	<i>1687 Francisco de Elcarte</i>	
	1688 Cristóbal Tixedas		
		<i>1690 Gazola</i>	<i>1690 Martínez de Zalduendo</i>
			<i>1692 Angeleres</i>
	1696 Pedro Aqueña y Mossa		
1697 José Colmenero		1697 Salvador Leonardo de Flores	
	1698 López Cornejo	1698 Tomás Fernández	
1700 Pedro Ossorio		<i>1700 Muñoz y Peralta, Diego Mateo Zapata, Boix Moliner</i>	

Italics: People who know how to distil, who have operated with metals and minerals, and who know about spagyrics, quoting Hermes, Paracelsus, or other spagyrist. *Total: 33. Total italicised: 24. Percentage of those italicised: 72 %.*

If we were to take relationships to institutions and spheres of influence as a means to understand late 17th century Spain, it would also be a valid guide to clarify the dichotomy between official and academic medicine. The *Regia Sociedad de Medicina de Sevilla* (Royal Society of Medicine of Seville) provides a good example.

The Royal Society of Medicine of Seville

Let us imagine for a moment that we are members of a tennis club, but that we do not know any of the other members. Upon paying our first visit to the club, we might expect to find people playing tennis, or at least talking about tennis. But imagine that, when we entered the club, we found everyone playing ... golf. Our puzzlement would be similar to the confusion that awaits a researcher undertaking a study on the Royal Society of Medicine of Seville. Rather than reading the traditional medical assumptions concerning the properties of the liver or a new surgical treatment, the members studied chemistry. Or, in the words of a contemporary:

Y vuelvo a decirle: debe extrañarse que sin haver pisado los umbrales de la Sociedad, ignorando los experimentos que allí con racional methodo se practican, ni tener voto en la materia tenga la ossadia de llamar (sin más prueba que su antojo) puros Pharmaceuticos y no insignes Espargiricos a aquellos tres ilustres socios.⁴⁸

The *Regia Sociedad de Medicina de Sevilla* was founded in the year 1700, following Charles II's decree on 25 May of that year, and was endorsed by King Philip V at Barcelona in October of the following year.⁴⁹ Its importance for the study of the relationship among Spanish alchemy and medicine is paramount. Members of the Society and their activities did not go unnoticed by other physicians; members unhesitatingly entered into the greatest controversies of their day. Founding members went so far as to call themselves the Sons of Hermes.

Returning to the question chemical experimentation, it might seem that chemical experimentation was something new during the late 17th century, both in Spain and Europe. It was not, however. In 1668, Jacob Le Mort published two books whose content exclusively focused on this issue. One was about chemistry and the links between reason and experiment, and the other analyzed these same links, but for pharmacy.⁵⁰ We also have some data confirming the same activity at El Escorial's Pharmacy in the first half of the 17th century, as in the case of Juan del Castillo,⁵¹ who claimed to have worked and have learned a great deal of chemistry there. We also

have information about the physician Matías de Beínza, who received an education in the same discipline and at the same place around 1640.⁵² It seems certain that the pharmacy at El Escorial operated as a school for chemical experimentation throughout the seventeenth century. In this sense, what happened at El Escorial since 1585 (or at Aranjuez since 1563)⁵³ was at least similar to, if not more advanced than, what was happening elsewhere in Europe. For example, in France the official opening of a centre under royal protection came to fruition in 1640 with the French Royal Jardin des Plantes.⁵⁴

In late 17th-century Seville, as in all Spain, the treatment of a patient frequently began with a process of consensus-building by physicians. A number of physicians got together to discuss the nature of the disease to be treated, the patient's condition, and the best therapeutic course of action. Debating amongst themselves, they would arrive at a decision. This conference or meeting among practitioners was known as a "Junta de medicos" and the *junta* consisted of two distinct categories. On one hand, academic physicians and, secondly, "revalidated" doctors.⁵⁵ Academic physicians had a graduate education, while "revalidated" doctors had to prove two years of practice under the supervision of a practicing physician. Both forms of certification could be used to pass the examination of the *Protomedicato*,⁵⁶ the only institution that granted licenses to practice medicine. This meant that, after providing evidence of practical experience, and after having passed the examination of the first physician, all "revalidated" doctors could officially practise medicine.

The *Junta* would have a chairman, who was by consensus a "revalidated" doctor; this fact is fundamental for understanding the origins of Seville's Royal Society. In 1696, this harmony was broken by the academic physicians of the Medical College of the University of Seville.

They decided that they alone, and not the revalidated doctors, should chair *juntas*, creating an impasse that had to be settled by the courts. We have several texts addressing this question, like the ones written by Juan Jose Garcia Romero,⁵⁷ and those written by Alonso López Cornejo,⁵⁸ among others. In Lopez Cornejo's writings, we can clearly see allegations that "revalidated" doctors were attempting to return to the presidency of the *juntas* while academic physicians tried to prevent this. Revalidated doctors claimed, for example, that the Presidency should be held by the oldest physician. Their opponents, when faced with this very traditional prerogative, did not declare themselves averse, but insisted if wisdom were an attribute of age, than the oldest physician must be the wisest physician. And, they claimed, the wisest physician, regardless of his age, was undoubtedly an academic physician:

El más digno es el más anciano y más anciano no es el de más edad, sino el que es más sabio. El Doctor ha de presidir y se ha de anteponer al que no lo es. Y asimismo el más digno se ha de juzgar el que es más anciano, y por más anciano, no se entiende el que es de más años de edad, sino el que es más sabio. Y siendo conocido el Doctor por más sabio que el que no lo es, siempre se ha de juzgar por más digno y se ha de anteponer y debe presidir la Doctrina de aquél que es más conocido.⁵⁹

Curing the patient was the *Junta*'s main objective. Revalidated doctors alleged that *juntas* could never be presided over by an official physician, since revalidated doctors had more practical experience than their academic counterparts. Lopez Cornejo addresses this issue:

Respuesta de los revalidados: Y si a estas doctrinas se responde que el Doctor es mas digno y debe presidir en la Universidad donde se tratan materias Theoricas, no en las casas de los enfermos, donde se tratan materias practicas, que solo requieren antigüedad de tiempo en el uso practico y assi no es razon que se anteponga un mozo Doctor en este exercicio practico que a un revalidado anciano.⁶⁰

Revalidated doctors emerged victorious in this dispute after a judgment was issued by García Bazán, who was president of the Royal Chancery of Granada in 1696.

The same year, attacks between “rational” physicians and practitioners of chemical medicine were numerous. In the text of Cristóbal de Luque—a physician of Seville who was opposed to the use of chemical remedies—entitled *Apollineo Caduceo*,⁶¹ we can read a caricature of a consultation among physicians or *junta*:

Un robusto quincuagenario padecía por el mes de diciembre de el año 1690. Assistian a su curacion dos medicos tan racionales que supieron cessar en la execucion de remedios, quando convino, quanto administrarlos utilmente en la oportuna ocasión. Remitieron algunos accidentes al quarto dia de la enfermedad y este mismo dia crecieron otros; y desconfiados de la prudente cessacion de remedios, el enfermo y familiares convocan a uno de los que vulgarmente llaman chymicos creyendo emmendar con su diligente administracion de socorros la pereza y negligencia que a los medicos acusaban. Repugno el uno entrar en compañía con tan extraordinario huesped, ponderando la inutilidad de tal colega, para voto en materia tan grave. Los dos medicos le retan publicamente para que assi de este desengaño resultaria al publico la conveniente prevencion de sus punibles imposturas. El hombre, al quinto dia se encontraba mejor, pero salio y se cogio un fuerte resfriado de pecho, siguio con los expectorantes dados por los dos medicos racionales, y parece que iba bien.⁶²

It is hardly necessary to read between the lines to detect Luque's disdain for the *chymico* in the following:

Dicho del chimico: No he gastado el tiempo en aprender Aphoristicas reglas ni en leer sermocinales erudiciones, porque ni unas ni otras descubren el velo a los preciosos arcanos que Naturaleza encierra en los tres reinos: Animal, Vegetal y Mineral): Solo la experiencia (en cuyo robusto quicio estriva la Medicina) he fiado esta dificil empresa, por esso he peregrinado la más parte de Europa y a costa de muchas observaciones he debido a la Spagyrica la invencion de poderosos remedios para vencer hasta las mas rebeldes enfermedades, principalmente en la Anatomizacion de los Minerales, en quienes a porfias de las operaciones de el fuego reduzen los mas balsamicos aires, como que estos son el mas proporcionado deposito del Mercurio de la Vida.

Luque: Es muy verosimil para los hijos de Paracelso que el viento Aquilenor ocasione una dissolucion quando el Austral es author de coagulacion.

Chimico: Para ocasiones como esta tengo un secreto muy experimentado... El secreto no lo diré porque no es justo publicar lo que tanto ha costado ni exponer el desprecio lo que es tan estimable.⁶³

Given this disdain for practitioners of chemical medicine, it is not surprising that revalidated doctors wanted their own institution, free of the scrutiny of academic physicians. This desire led Juan Muñoz y Peralta to be the driving force behind The Royal Society. He and other revalidated doctors wanted amicably to discuss all issues regarding chemical medicine, in their own environment, apart from Galenist physicians with whom there could not be any reconciliation or understanding. The meetings of these revalidated doctors have been called *Tertulias* by historians. Thus, in 1697, five persons decided to found a society under the protection of their patron, the Holy Spirit. They included: Juan Muñoz y Peralta, and Salvador Leonardo de Flores; the pharmacist Alonso de los Reyes, Father Juan Ordonez de la Barrera, and the surgeon Gabriel Delgado. They described both the purpose and the conduct of their meetings:

Viendo, que los Autores modernos expagiricos, traen el methodo curativo mas suave, y mas primoroso, que los antiguos, se convinieron en juntarse todas las noches en Casa del Presidente, y alternativamente tomar puntos, y leer media hora, y la otra de argumento, y despues conferenciar sobre la enfermedad, que cada uno curaba, y lo que se ignoraba, con este estudio se aprendia.⁶⁴

As expected, the Society, still more or less a meeting of like-minded medical practitioners, was accused of practicing magic spells defending occult qualities.

Que el Cociliabulo de los Medicos Expagiricos usaba de Medicinas venenosas, y que los que no morian luego, dentro de 6. meses morian; y si por variacion de las casas llamaban a los del Vando contrario, la primera pregunta era, si se habia curado con algun Socio? Y si decia, que si, no le aseguraba; y si de facto moria, el recurso era tomar la Iglesia de los medicamentos expagiricos, y publicar, que ellos havian muerto al enfermo; llegaron a decir, que eran sismaticos, que seguian a los Hereges, Inventores de Ciencias no conocidas en este Pais, que se passaban de consentidos a atrevidos, haciendo ordenanzas sin el consentimiento del Consejo Real.⁶⁵

Once again, academic physicians issued new attacks from their positions of institutional power within the universities. They claimed the Society was illegal, arguing that valid medical education could only be focused on Aristotle, Galen and Hippocrates. Academic physicians wrote a report outlining this view, and brought it to the attention of the Royal Court in order to get an injunction against Society members. Once the report was received, bureaucratic wheels started to turn: the report passed from the Royal Court to the Royal Council. The Royal Council, in turn, requested a further report to the Royal Protomedicato, the institution best suited to resolve such problems. The Royal Protomedicato summoned Juan Muñoz y Peralta to appear before it. Muñoz y Peralta calmly addressed the charges, not hesitating to mention Hermes at the outset:

Y preguntado dixo: Que la Doctrina, que seguian era la Expagirica, que esta no era nueva, que quien la practico en Egypto fue Hermes Trimegistro por los años 2454, y Democrito la aprendio de los Egypcios, y la llevo a Grecia por los años de 3537 (...) Rasis, que fue por los años de 560, reinando en España Almanzor, usó de la Expagirica, que la traxeron los Sarracenos de Damasco por los años de 660. Albucasis usó de remedios Expagiricos, como tambien Avicena, el Arcenico, sublimato. Mesué Escritor, y defensor de Claudio Galeno, usó la chimica, que en su posicion de lo referido, ni era nueva, ni la querian inventar, porque de olvidada al escrutinio del Estudio, parecia nueva, que los Autores mas modernos, que seguian era Theofrasto, Paracelso, Silvio, Emulero, la Philosophia de Gacendo, la de Cartecio, la del Padre Maignan.⁶⁶

After hearing this testimony, the Royal Protomedicato gave an unexpected report to the Royal Council:

...diciendo, que no tan solamente eran buenas doctrinas, pero mui provechosas para el bien público, el qual visto por el Consejo, informó al

Señor Carlos Segundo, y S. Mag. aprobó, y constituyó la Academia Regia triunphante de sus Adversarios.⁶⁷

This is how, following Charles II's royal decree on the 25th of June 1700, the Royal Society of Medicine of the Revalidated doctors of Seville began operations.

Another element we have to consider is the limited authority enjoyed by the Royal Protomedicato. This is especially true when we consider the role played by both alchemy and chemical medicine within the medical discourses of the day. On one occasion, the medical tribunal was forced to make a slight rectification concerning a forbidden medicine, called "Agua de Paulo Manilius", or Paulo Manilio's Water. Popular pressure against the ban was such that the Protomedicato decided to replace this water with another of different composition, but which the Protomedicato called by the same name. The alchemist Luis Alderete y Soto, knowing this, did not hesitate to let the King know, while defending his own Water of Life:

Esto le sucedió con otra agua a Paulo Manilio, que porque la usava, el Protomedicato de España lo echo de ella. Inventaron los Methodicos para acallar al pueblo, un agua de Paulo Manilio, que oy recetan, pero sin efectos conocidos de la verdadera.⁶⁸

This does not indicate that the Protomedicato benefited from a positive popular image. And Alderete's Water of Life, tried by thousands of people, was also banned in the year 1681 by the Protomedicato. This time, there were no rectifications and no backtracking. But nonetheless, King Charles II himself wanted Friar Andres de Villacastín to make Alderete's Water of Life:

El Rey nuestro señor (que Dios guarde) me pregunto si me atrevería a hazer al agua de la vida? Respondí, que no. Mandome viesse al autor de ella; obedeci; y tuve siete u ocho conferencias con D. Luis de Aldrete y Soto, la menor de cinco horas. Bolvi a los pies de su Magestad. Informe, y di memorial del juizio que yo auia hecho, y de cómo estaua prompto a reuelarme el secreto, y hazerle en mi presencia, añadiendo que era yo sujeto capaz; mas no se resolvió su Magestad a tomar resolucion en este negocio.⁶⁹

We do not know how this affected the Protomedicato. But we know that Alderete kept prescribing his Water of Life, and ignored the ban. Alderete explains why:

La causa, dar vida Dios por medio del Agua de Vida a tantos desahuciados, y sanado a otros, que aunque los exemplares, que escriuió, son muchos, se yo de otros muchos sucessos despues que suspendio la pluma.⁷⁰

Other attacks levelled at the Protomedicato concerned the approval or ban of remedies' this tended to pit apothecaries against physicians, ultimately giving apothecaries the upper hand. Even Galen's followers criticized the Protomedicato for this, while refusing to recognize the prerogatives of irregular medical practitioners⁷¹.

No tienen voto los boticarios en esta ni en semejantes causas. [...] Si no tienen voto los boticarios en estas causas como se les busca el D. Juan Gutierrez? y como los llama maiores pudiendo ser que aya otros tam buenos? Cae de su autoridad el medico quando la pone en el boticario. Este es oficio de mero executor.⁷²

Furthermore, medicine as a whole was in danger of falling into disrepute and discredit in all of Europe in the late seventeenth century. Here, too, alchemy and chemical medicine played a role. There were many who, while protected by the inexorable advance of chemistry, tended to undermine its authority because they failed to understand it properly. It may have been a science, but many treated it like a game. The prestige of alchemy and chemical medicine was lessened by those who sought only fame or money. These were charlatans and quacks, characters who roamed outside official medicine, and who claimed to be experts. Quackery created an obstacle to be overcome by those who—through their own efforts—demonstrated the benefits of the therapeutic application of chemical remedies. One example of quackery was the *chymico* that Cristobal Luque amusingly describes above. The *chymico* said he learned his science by travelling throughout Europe and as such he presented himself as a master of the spagyric art. He was not alone. Many others, whether foreigners or not, proved to be those who undermined the prestige of medicine in general and chemical medicine in particular:

No se han de tener por chimicos a los charlatanes saltabancos y empiricos bagamundos que con solo el antimonio y mercurio mal preparados ofrecen salud y quitan las vidas cada día, vendiendose por Chimicos, como lo veo infinitas veces por llegar a este piadossísimo hospital (...) muchos de ellos a causa de estar en el mayor paso que se conoce por serlo para toda Francia, Ingalaterra (sic), Italia, Imperio... y yo vivo en este mesmo Hospital (...) donde suelo tener con los tales gustosos coloquios, viendo lo mucho que ofrecen con poca Ciencia y mucho arrojo.⁷³

It is difficult to find an evaluation of the state of medicine from someone with no stake in the domestic debates of the period. There are few examples of foreign observers who aseptically analyze the situation. But they do exist. One example comes from the Veronese physician Giuseppe Gazola⁷⁴. In his *Mundo engañado por los falsos médicos*⁷⁵, he questions, in a very critical and satirical analysis, the state of medicine of his time and, in particular, the case of Spain. Gazola criticizes the errors of the followers of nearly every school of medicine, paying particular attention to dogmatic physicians (i.e. Spain's orthodox Galenists) whom he called "partisans of the ancients."⁷⁶ Gazola divided physicians into dogmatic and empirical camps; the dogmatists were the Galenists; and the others were "all those who do not understand more than chemistry", adding that empirical physicians could never become true doctors.

...porque no teniendo otro que aquella sola experiencia, i siendo esta falaz por razón de las muchas, i varias circunstancias que cada día se ven complicadas, es lo mismo que querer caminar con un pie solo por un camino muy resbaladizo. El engaño de los empíricos consiste en la confianza que tienen de curar con un mismo secreto todos los enfermos del mismo mal.⁷⁷

After reviewing the state of the medicine, Gazola advocates taking the good from each camp. Optimally, physicians would synthesize the views of both camps in an eclectic approach:

Quien puede comprender mejor todo esto que el médico moderno? Puesto que él tiene noticia de los nuevos descubrimientos anatómicos, de las demostraciones de una bien fundada mecánica, de tantas luces de la nueva filosofía experimental, de la eficacia de los remedios químicos, del uso de los microscopios perfectísimos...⁷⁸

It would seem that we have before us a chessboard upon which we can see all the pieces perfectly. But this is not the case, because orthodox practitioners were familiar with alchemy and chemistry, as we can see in the words of the most famous detractor of Alderete's Water of Life, Andrés Dávila y Heredia:

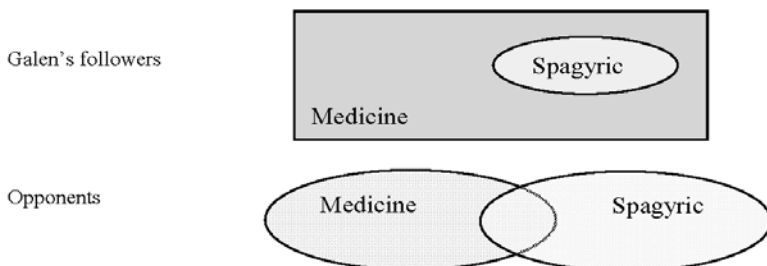
El oro huele menos, por la poca mezcla de malicia de azufre, por razón de ser útil y que solamente tiene una untuosidad complexional, consumidas todas las otras humedades impuras y superfluas. La plata tiene su terrestre, no quemando, a sino que puede quemar, y por eso evapora más, y echa de sí más olor que el oro. La plata tiene el sabor dulce. El hierro huele mal, mezclado lo terrestre son el sulphur. El plomo y el estaño por su mucha acuosidad tienen los sabores y olores muy señalados. Ocurramos al

mercurio, azogue o argento vivo, de quien dicen los chimicos ser simiente o principio de todos los metales; sublimándolo con mezcla de azufre se hace el cinabrio y sublimándolo mezclado con sal armoniaco se hace el solimán.⁷⁹

But there is more evidence. For example, Juan de Cabriada, in his *Carta Philosophica*, the Bible of the novatores for Spanish historians, has no qualms about saying that official and Galenist physicians used chemical remedies, especially in the Royal Chambers, and did so "very wisely":

A mas que no avrá ninguno, que diga que la Chymica es mala; pues veo, que los Señores Medicos de Camara usan de ella, en quanto pueden, y alcançan. Usan de Sales, Usan de algunas preparaciones del Antimonio: de algunas de Mercurio, y de algunos extactos. Y en suma, por conocer la poca actividad que tienen los medicamentos galenicos, para las enfermedades Herculeas, siempre echan mano (muy prudentemente) de los Medicamentos Chymicos, de que tienen noticia y experiencia.⁸⁰

Another feature of the controversy focuses on the discussion of the role the spagyric art should have within medicine. It is one of the most interesting and important features of the polemics because its purpose is to clarify spagyrics' conceptual framework. For orthodox physicians, spagyric only was a small facet of medicine, a part to be subsumed into the whole. Thus, its axioms should agree with Galenic medicine. The defenders of spagyric held a contrary position. They claimed that the *spagyric art* had a number of ontological presuppositions that were particular to it and this made spagyrics completely different from traditional medicine. This debate is illustrated in the following graph:



But this dualistic classification, while clear, does not reflect what was a more complicated reality. Andrés Gámez himself distinguished a part within *chymica* that was "noble":

En la parte noble de la chymica, que no tiene por materia açogue, antimonio, y otros sospechosos medio minerales, se dan, Señor, muchos, y selectos remedios, de cuya eficacia, y prontitud se consiguen grandes progresos en la curacion de graves y pertinaces enfermedades.⁸¹

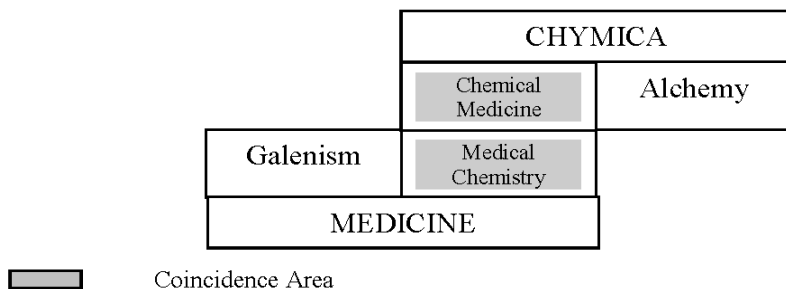
What about the ignoble part of chymica? For Gámez, this was done by ignorant people, tricksters who were preparing medicines that did not guarantee patient's health or life.

(...) muy bien podré yo testificarlo, pues siendo Protomedico General en el Reyno de Napoles muchos años, siendo Virrey el Excelentissimo Señor Marques de los Velez, castigue a estos Pseudochimicos, y averigue ser hombres dolosos, falsos, y engañadores; hize bolver muchas cantidades de dinero que avian sacado a los enfermos, para hazer los remedios singulares de oro, plata, y perlas. Y aviendo examinado los tales remedios por Chimicos expertos, y de buena conciencia, halle que todos eran mercuriales, y antimoniales, o sublimados, o precipitados, o vomitivos de otras especies.⁸²

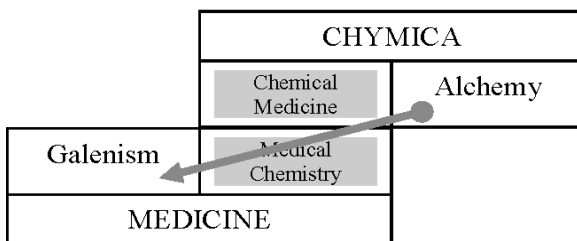
Nevertheless, we also have to pay attention to opposing positions, such as Friar Andres de Villacastín, who, as Gámez did, divided *chymia* in two parts; one having to do with health and the other to do with minerals:

Dos partes tiene la Chymica; vna, que trata de la preparación de medicamentos, que se toman de los animales, minerales, metales, Piedra y demás vegetables, enseñando a separar las partes subtiles de las gruessas; lo spiritiuoso de lo feculento, y terreo; lo que es antidoto, de lo venenoso. La otra parte es la que trata de los metales y de sus transmutaciones: llamaronla los antiguos Alchymia, Alchemia, Crisopeya, Metalurgia, Arte aurifera, Arte Hermetica. Con toda la latitud de su significacion la voz Chymica comprehende essas partes en que se divide.⁸³

As we can see, the discipline known as *chymica* comprised two parts. So, what is the difference between the two positions? For some, the part unrelated to therapeutics and health was not worthy of esteem, while for the others, it was. We can also see it graphically:



For many, and especially for Galen's followers, chemical medicine did not have the rational character Galenic Medicine possessed. These saw little benefit in making it rational. This was because chemical medicine came accompanied by a discipline, chemistry, a part of which was alchemy; alchemy was akin, in their minds, to magic. But other physicians, such as the *Revalidados* of Seville, carried out their work within an official institution, like the Royal Society of Medicine of Seville. The clear danger for Galenists was that a line could be drawn from alchemy to rational medicine, ultimately contaminating it with magical elements. Although the danger was real, they soon saw another greater danger that could undermine their status.



The danger to which we refer was that attempts to rationalize alchemy and spagyry through experience and laboratory practice could give them a *scientific* status. This would permit alchemy and spagyry to develop chemical remedies in a systematic and controlled way. This would mean that, on a theoretical level, chemistry and medicine could compete on equal terms. And, if this were possible, it would be *reason* against *reason*. All these elements are amalgamated in all of the controversies of the day. If someone refused the utility and the lack of an axiomatic character for chemical medicine, the attack came from Galen's followers. If Jean

Beguín and Pierre Jean Fabre were both cited by them, we can be sure we are reading a Galenist. If, however, we are dealing with a defence of medical chemistry, these names are cited as opponents. For a Galenist, there could be no reason in anything that came from alchemy or Paracelsus; others saw a wonderful opportunity to grant scientific and rational status to this part of medicine. Some of them said the others were ignorant, and the others said that Galenists were practising so ancient a medicine that it was nearly quaint. In the background lies a problem we have already noted: we are talking about two different kinds of *reason*. This resulted in opposition and conflict over the course of many years.

There were also voices, both in Europe and in Spain, who claimed for the union of the *ars chimica* with Galenism, but only in a limited area of medicine. As we know, the so-called medical art was traditionally divided into three parts: dogmatic, surgery and *ars pharmaceutica*.⁸⁴ Dogmatic physicians were not allowed to prepare remedies; this right was exclusive to pharmacists. If we link this with the fact that many remedies were chemical during the late 17th century, and that, unlike Spain, many people—such as Pierre Jean Fabre, William Davisson or Jean Beguín—experimented with remedies in their laboratories, the conjunction of these three aspects were prone to provoke more controversy.

Moïses Charas (1618-1698), for example, advocated a union between the two types of pharmacies:

Intime necessitudine cum Pharmacia Galenica & Chymica coniungantur, mutuumque & perpetuum sibi praebeant auxilium (...) Pharmacia Chymica non secus ac Galenica, versatur circa Vegetabilia, Animalia & Mineralia.⁸⁵

It seems clear that these two medicines could not be linked without a previous relationship between those who had prepared the remedies, pharmacists, and those who prescribed them: physicians. Moreover, as we said, during the same period, Andres de Villacastín, a monk at San Lorenzo de El Escorial, in his defence of Alderete's Water of Life, remarked:

Los Boticarios en essas materias, aunque cortissimos hombres, saben mas que muchos de los Medicos: son cosas que se adquieren estudiando, trabajando, exerciendo, y experimentando, para conocer, y distinguir en lo que importa la vida.⁸⁶

Also, Pedro de Godoy complained to the physicians, when he criticized Alderete's Water of Life:

Ansi veo que los Dotores van dando en Chimicos y los Chimicos en Dotores.⁸⁷

It is true that the most practical part of medicine, restricted to apothecaries, acquires exceptional importance for the acceptance or rejection of chemical medicine. And, therefore, pharmacists became protagonists; protagonists that have rarely been granted the importance they deserve. On the other hand, there were apothecaries who claimed not only for the union between the two types of pharmacy, but between the two types of medicine:

Tratando y explicando en dicha Pharmacopea la Medicina Galenica, dicha Racional, y la Chimica, ò Espargirica, que en estos tiempos están ya la una y la otra tan hermanadas que nadie me parece puede vituperar la una por alabar y ensalçar à la otra, como consta por muchos autores que dicen: Medicina Chimica non possunt separari, quia absque Chimica & cognitione, neque Theorica, neque Practica Medicina potest esse. Y Senerto, siendo galenista, es del mismo parecer. Y Crollo, en su Basilica Chimica también dijo lo primero, que la medicina Racional y Química, para la verdadera y perfecta curación no se pueden separar, digan lo que quisieran los galenistas, que aborrecen y vituperan remedios chimicos (...)⁸⁸

To conclude, we can say that it seems clear that a process culminated at the end of the 17th century in Spain. The early phases of this process are not well defined and cannot to this point be explained as clearly as we might like. It is also true, however, that we have all elements necessary for such an analysis. We can see all of the medical polemics as part of a shift within an entire society, a time full of intellectual, political and scientific movements. Only the universities—bastions of Galenism—remain isolated from these changes. There are three indispensable components to consider: the weakness of Galenism, the growing influence of medical chemistry, and the tensions generated by the contest between Galenism and chemical medicine. So, while we have a preliminary picture of the developments and controversies within medicine at the end of the seventeenth century, it is also clear that more work needs to be done. Future studies will need to weigh the importance of each of the elements we have outlined.

Notes

* My thanks to Didier Kahn for all suggestions and corrections to this paper.

¹ On the *Novator* movement: José Luís Abellán, “Los novatores,” in *Historia crítica del pensamiento español*, (Madrid: Espasa Calpe, 1981), 5 vols. v. III: 342-

410. François López, "Los novatores en la Europa de los Sabios," *Studia Histórica, Historia Moderna* 14 (1996): 95-111. José M. López Piñero, "Juan de Cabriada y el movimiento *novator* de finales del siglo XVII. Reconsideración después de treinta años," *Asclepio* XLV-1 (1993): 3-53. José M. López Piñero, "Los comienzos de la Medicina y la Ciencia moderna en España en el último tercio del iglo XVII," *Medicina e Historia* XLIII (1968): monographic issue. José M. López Piñero, *La introducción de la Ciencia moderna en España* (Barcelona: Universidad, 1969). José M. López Piñero, *Ciencia y Técnica en la sociedad española de los siglos XVI y XVII*, Barcelona: Península, 1979). Vicente Peset, "El doctor Zapata (1664-1745) y la renovación de la Medicina en España (apuntes para la historia de un movimiento cultural)," *A.I.H.M.A.M.* XII (1960): 35-93. Vicente Peset, "La Universidad de Valencia y la renovación científica española (1687-1727)," *Asclepio* XVI (1963): 214-31. Giovanni Stiffoni, "Los novatores y la crisis de conciencia europea en la España de la transición dinástica," in Ramón Menéndez Pidal (dir), *Historia de España* (Madrid: Espasa Calpe, 1985), t. XXIX, 5-55. On *novatores* in non-medical fields: Pedro Álvarez de Miranda, "La época de los novatores, desde la historia de la lengua," *Studia Historica, Historia Moderna* 14 (1996): 85-94. Antonio Mestre Sanchís, "Crítica y apología en la Historiografía de los novatores," *Studia Historica, Historia Moderna*, 14 (1996), 45-62; Víctor Navarro Brotons, "La renovación de las ciencias físico-matemáticas en la Valencia pre-ilustrada," *Asclepio* XXIV (1972): 367-89; Víctor Navarro Brotons, "Los jesuitas y la renovación científica en la España del siglo XVII," *Studia Historica, Historia Moderna* 14 (1996): 15-44.

² José M. López Piñero, "Juan de Cabriada y el movimiento *novator* de finales del siglo XVII. Reconsideración después de treinta años," 3-53.

³ There are no biographical data about his birth and death. We know he practiced during the second half of 17th century. He was Perpetual Councillor of the city of Málaga, and was a sheriff of the Inquisition. He travelled to Italy, where he was in contact with alchemists and physicians. He was a pseudo-alchemist who successfully sold his famous "Agua de vida" in 1680. Rafael Folch Andreu, "La química", in *Estudios sobre la ciencia española del siglo XVII*, ed. Asociación Nacional de historiadores de la ciencia española (Madrid: Gráfica Universal, 1935), 337-93. José M. Laza Rojas, "Nuevos datos acerca de Luis de Aldrete y Soto," *B.S.E.H.F.* 7 (1956): 68-73. Julio Mathias, *Don Luis de Aldrete y Soto, regidor perpetuo de la Inquisición y curandero* (Málaga: Librería anticuaria El Gadalhorce, 1963). José M. Valles, *Papeles sobre el agua de la vida y el fin del mundo* (Madrid: Editora Nacional, 1979).

⁴ Juan Vázquez de Cortés, *Desengaños philosophicos* (Sevilla: Imprenta de las Siete Revueltas, 1737). Manuel Gutiérrez de los Rios, *Breve reflexion sobre el prologo que Don Juan Vazquez Cortes hizo a la frente de un impresso que tiene por título Juicio sobre la methodo controvertida de curar con agua y limitacion en los purgantes* (Granada: Imprenta de la Santísima Trinidad, 1736). Alonso López Cornejo, *Respuesta a un papel apologetico que con el título de Medicina en las fuentes y purgas sin corriente sacó D. Juan Vázquez de Cortes* (Granada: Imprenta de los Padres clérigos Menores, 1735).

⁵ Pedro de Aqueña was *Protomédico General del Reino de Cerdeña*, King Charles II Chamber Physician. Pedro de Aqueña, *Copia de la carta que el doctor Pedro Aqueña... ha escrito a un cauallero, su amigo de la ciudad de sasserr... respondiendole a lo que se le preguntaua sobre el hecho del P. Angeleres y Real Protomedicato de Castilla* (Madrid: Antonio Román, 1693). Juan d'Alos was Protomédico of Catalonia at late 17th century. Juan d'Alos, *De Corde hominis disquisitio physiologico-anathomica* (Barcelona: Antonio Ferrer, 1694).

⁶ Physician López Cornejo from Seville died in 1698. Alonso López Cornejo, *Question medico legal sobre el articulo de presedencia entre los doctores de la celebre Universidad de Sevilla y los medicos revalidados* (Sevilla: n.e, 1697).

⁷ Miguel Ximenez Melero was a Sevillian physician and charter member of the Royal Society of Medicine of Seville. Miguel Ximenez Melero, *Alegato jurídico a favor de el derecho y costumbres que tienen de preceder en las consultas y funciones curativas los médicos revalidados a los doctores menos antiguos* (Sevilla: Herederos de Thomás López de Haro, 1697).

⁸ Both were seen as alchemists, charlatans, or quack doctors. Luís Amigó y Beltrán was a physician from Zaragoza. On Luis de Alderete y Soto, see note 3. On Juan de Vidos y Miró, see Miguel López Pérez, *Asclepio renovado. Alquimia y Medicina en la España Moderna* (Madrid: Corona Borealis, 2003), 263-6, 297.

⁹ Justo Delgado de Vera, *Defensa y respuesta jvsta y verdadera, de la Medicina racional y philosophica, profanadas de la imposturas de la Chimia, introductora de el remedio universal, y agua de la Vida de Alderete* (Madrid: Antonio Román, 1687), 111.

¹⁰ Johann Freytag, *Novae sectae Sennerto-Paracelsicae recens in philosophiam & medicinam introductae, quâ antiquae veritatis oracula, et Aristotelicae ac Galenicæ doctrinae fundamenta convellere & stirpitus erudare moliuntur novatores, detectio & solida refutatio* (Amsterdam, Guilielmum Blaeu, 1637).

¹¹ Jean de Renou, *Officina Pharmaceutica* (Hanoviae: David Aubri, 1631): 192.

¹² Gerónimo de la Fuente Piérola, *Tyrocinio Pharmacopeo...* (Madrid, Antonio Zafra, 1683): 177.

¹³ *Novatores* were not alone. Delgado mentioned two more medical schools unknown to us, such as *Diobolares* school, or *Mithrangistas*, adding that "scholars know what they are filthy vermin." (Justo Delgado de Vera 1687, 20-1).

¹⁴ Justo Delgado de Vera 1687, 34-5.

¹⁵ On French spagyrist and paracelsians, see Didier Kahn, *Alchimie et Paracelsisme en France à la fin de la Renaissance (1567-1625)* Geneva: Droz, 2007.

¹⁶ Rudolf Schmitz, *Die Naturwissenschaften an der Philipps- Universität Marburg, 1527-1977* (Marburg, N.G. Elwert Verlag, 1978): 10-15, 193-202, 338-42. Bruce T. Moran, *The Alchemical World of the German Court. Occult Philosophy and Chemical Medicine in the Circle of Moritz of Hessen (1572-1632)* (Stuttgart: F. Steiner Verlag, 1991): 177-178; Bruce T. Moran, "Court Authority and Chemical Medicine: Moritz of Hessen, Johannes Hartmann, and the Origin of Academic Chemiatria," *Bulletin of the History of Medicine* 63 (1989), 225-46. Johann

Hartmann, *Praxis chymiatriz edita a Iohanne Michaelis et Georgio Everardo Hartmanno authoris filio* (Genevae: Chouet, 1658).

¹⁷ Juan Guerrero, *Sol de la Medicina que alumbrá los que ignoran la verdadera doctrina de Hipócrates y Galeno, contra el memorial y papel de el Agua de Vida de Don Luis de Aldrete y Soto* (Madrid: Juan García Infanzón, 1682).

¹⁸ Juan Guerrero 1682, 5.

¹⁹ Miguel López Pérez and Mar Rey Bueno, "La instrumentalización de la Espagíria en el proceso de renovación," in Miguel López Pérez et al., *Los hijos de Hermes* (Madrid, Corona Borealis, 2001): 279-346.

²⁰ John Slater has recently changed our vision on Cabriada in an exceptional article. John Slater, "Rereading Cabriada's *Carta*: alchemy and rhetoric in Baroque Spain," *The Colorado Review of Hispanic Studies* 7 (2009): 67-80.

²¹ Mar Rey Bueno, *Los señores del fuego. Destiladores y espagíricos en la corte de los Austrias* (Madrid: Corona Borealis, 2002): 197, 204-6, 217, 222-4, 235, 248, 259.

²² "Que no obstante el professar y haver professado la Medicina racional de Hipocrates y Galeno, y haverla enseñado publicamente en las Universidades referidas; se ha aplicado al estudio, y conocimiento de la Medicina Hermetica, y Chimica, indagando, no solo la virtud de sus remedios sino también los modos de hacerlos...". Royal Palace of Madrid. General Archive, Personal Records, 389/26.

²³ Andrés Gámez, *Discurso filosofico, medico e historial que a la sombra de la razón, y a la luz de las Apologias, Luz de la Medicina, y Sol de la Medicina, & c. pretende hallar la verdad en la defensa de la Medicina dogmatica, y su Sangria, en la psibilidad del Agua de la vida, y otras materias adjacentes a estas dos, como principales* (Madrid: Antonio Román, 1682): "Aprobación del Reverendissimo Padre Maestro Fray Benito de Aste".

²⁴ Vicente Pérez, *El promotor de la Salud de los hombres sin dispendio el menor de sus caudales. Admirable methodo de curar todo mal, con brevedad, seguridad y a placer. Dissertacion historico-critica-medico-practica en que se establece al Agua por Remedio Universal de las dolencias, escrita por el Doctor D. Vicente Pérez, socio de la Real Academia de Solidistas, vulgo el Médico del Agua, quien la dedica al Exmo. Sr. Marqués de la Ensenada* (Madrid, herederos de Francisco del Hierro, 1753).

²⁵ Anonymous, *Concilio y Junta que formaron los medicos, boticarios y sangradores deste Corte quando cienron venir al Medico del Agua D. Vicente Pérez*, n.d. Nacional Library, Madrid (hereafter B.N.) ms. 10951: 166.

²⁶ Luís Alderete y Soto, *Discurso del cometa del año 1680* (Madrid: Lucas Antonio de Bedmar, 1681). Luís Alderete y Soto, *Discurso del cometa deste año de 1682 en que se explica la significacion y aparato que trae en execucion del antecedente del passado año de 1680* (Madrid, Lucas Antonio de Bedmar, 1682). Luís Alderete y Soto, *Respuesta a la sombra de la razón que con luces suele ocultarse a ella, del discurso filosófico medico e historial del Doctor D. Andrés Gámez, medico de familia, Cathedratico de Methodo de la Universidad de Granada y de Visperas de Caller, de Prima en la ilustre Academia de la Ciudad de Nápoles y su Protomedico General*, B.N. ms. 4223. Anonymous, *Discurso que prueba que el*

mejor mestruo para la extracción del opio, de la descripción de Ioseph Querquetano, para su laudano opiata, es un vinagre destilado, o çumo de limon, ù de cidra, & c. que saca a la luz un profesor del arte pharmaceutico (Madrid: Imprenta Real, 1684). Isidro Fernández Matienzo, *Discurso medico y physico agradable a los medicos ancianos y despertador para los modernos contra el medicamento caphè* (Madrid: Melchor Álvarez, 1693). Pedro de Godoy, *Discurso serio jocoso sobre la nueva invención del agua de la vida y sus apoloías* (Madrid: Joseph Mathias Escribano, 1682). Pedro de Godoy, *Segundo discurso serio jocoso* (Madrid: n.p., n.d.). Juan Bautista Juanini, *Discurso physico... en la segunda parte se pone un methodo preseruatiuo de los malos vapores y exhalaciones... de las calles de Madrid* (Madrid: Imprenta Real, 1689).

²⁷ Luís Alderete y Soto, *Luz de la medicina y respuesta a las objeciones puestas a la universal* (Madrid: n.p., 1681). Luís Alderete y Soto, *Señor, D. Luis de Alderete y Soto... dize, que por Cedula de V. Mag. de 21 de enero de 1680... tiene licencia para imprimir la filosofia christiana* (Madrid: n.p., 1681). Luís Alderete y Soto, *La verdad acrisolada con letras divinas y humanas.../ escrita por Don Luis de Aldrete y Soto respondiendo al auto del Protomedicato en que prohibe la Medicina Universal, y al papel de Pon Iuan Guerrero que intitula Sol de la Medicina, aprobada por D. Antonio de Ron* (Valencia: Benito Macé, 1682). Luís Alderete y Soto, *Crisol de la verdad... respondiendo al auto... va corregido y aumentado de su autor en esta ultima impression* (Madrid: n.p., 1683). Luís Alderete y Soto, *Señor, Don Luis de Aldrete y Soto dize que ha llegado a su notizia que cierto medico de camara ha asegurado que en el papel que el suplicante escribió de la Luz de la Medicina...* (Madrid: n.p., n.d.). Pedro Aquerza y Mossa, *Copia de la carta que el Doctor Pedro Aquerza... ha escrito a un cauallero, su amigo de la ciudad de Sasser... respondiendole a lo que se le preguntaua sobre el hecho del P. Angeleres y Real Protomedicato de Castilla* (Madrid: n.p., 1693). Juan de Cabriada, *De los tiempos y experiencias el mejor remedio al mal por la nova antigua medicina: carta philosophica medica chimica* (Madrid: Lucas Antonio de Bedmar, 1686). Anonymous, *Señor. Tan descubiertamente haze la naturaleza oposicion a lo bueno, que lleuados della escurecen los hombres el antidoto contra los vicios, rindiendose a la vana esperança del deleite ò a la estoyca è inutil oposicion de la verdad... hasta el dia de oy, señor, en Todas las naciones ha durado esta oeconomia y organizacion de la medicina hasta que los cirujanos latinos de V. Mag. por escurecer la verdad... tratan de dividirla, poniendo en las reales manos de V. Mag. un memorial...* (n.p: n.p., n.d.). Andrés Dávila y Heredia, *Carta que Don Andres Davila y Heredia, Señor de la Garena escrivió al Abad Don Iuan Bravo de Sobremonte en que le da cuenta como ha recibido las apologeticas respuestas que ha escrito impressas en Valencia en casa de la viuda de Benito Masse, su fecha en Madrid a 18 de enero de 1681* (Madrid: viuda de Benito Masse, 1681). Andrés Dávila y Heredia, *Para honra y gloria de dios responde a la apología, en defensa de la medicina substancial, y universal del agua de la vida escrita por el Licenciado Don Luis Amigo y Beltran en que se prueba que no hay medicina universal* (Zaragoza: viuda de Agustín Berges, 1682). Andrés Dávila y Heredia, *Respuesta al discurso filosofico, medico e historial que*

ha compuesto el Doctor Don Andres Gamez (Alicante: n.p., 1688). Justo Delgado de Vera, *Defensa y respuesta justa y verdadera de la medicina racional y philosophica profanada de las imposturas de la Chymica* (Madrid, Antonio Román, 1687). Filiatro, *Verdad triunfante respuesta apologetica escrita por Filiatro en defensa de la carta filosofica medico-chymica del Doctor Iuan de Cabriada: manifestasi lo irracional de la medicina dogmatica y racional del aduanista enmascarado* (n.p.: n.p., 1687). Juan Jiménez Molina, *La verdad triunfante de las nieblas de la mas altanera contradiccion, escrita por el Dr. D. Juan Ximenes Molina medico en Murcia en respuesta de una Apologia contra una resolucion que havia dado a una carta consulta de D. Nicolas Valdero Navarro y D. Rafael Francisco de Fuentes y Cerda, medicos de Malaga* (Murcia: Jaime Mesnier, 1731). Juan Bautista Juanini, *Carta escrita al Doctor Don Francisco Redi en la qual se dice que el sal acido y alcali es la materia que construye los espiritus animales* (Madrid: Imprenta Real, 1689). Miguel de Yepes, *Triaca compuesta contra un simple veneno / Apologia por Miguel de Yepes en respuesta de un papel que escrivio Don Andres Davila y Heredia impugnando el discurso theologico y philosophico que contra la astrologia escrivio* (n.p.: n.p., 1681). Anonymous, *Carta que un cortesano curioso, hallándose fuera de Madrid, escribe a un amigo suyo, censurando la respuesta que el Señor de la Garena dio a la estampa al discurso filosofico, medico e historial que escrivio el Dr. D. Andres Gámez cerca del agua de vida y otras materias* (Alicante: n.p., 1683). Francisco Perena, *Conclusiones breves y claras, theologico-medico-legales contra la dissertación médico-theologica que dio a la luz Diego Matheo Zapata* (Madrid: Bernardo Peralta, 1733).

²⁸ Luís Amigo y Beltrán, *Apologia en defensa de la medicina substancial y universal del agua de la vida : en que se haze examen y juicio de los papeles que en orden a ella se han publicado por Don Luis de Alderete y Soto y el Doct. Don Iuan Guerrero: pruebase en ella que la vida se conserva y mantiene con espiritus y que todas las enfermedades entran por ellos... declarase el misterioso y arcano secreto de la materia* (Zaragoza: viuda de Agustín Verges, 1682). Andrés Gámez, *Censura sencilla de el papel que publico en esta Corte el Reverendo Padre Fray buenaventura angeleres, con el título de desengaño de la Filosofia Real, y desempeño de la Medicina sanativa* (Madrid: n.p., 1694). Anonymous, *Advertencias que haze un amigo del aduanero a los cortesanos eruditos combinados a la leccion de un papel mazamorra por el bachiller Filiatro, su autor, cuyo título es verdad triunfante* (n.p.: n.p., 1687).

²⁹ José Pablo Fernández, *Dialogos entre el Doctor Luis Maria Cuspriilli Tribeanus y su discípulo el medico de Camuñas sobre los papeles que han salido del curioso discurso del D. D. Pedro Navarrete, Cathedratico de Cirujia que fue en Granada..., en que quieren satisfacer a la carta de dicho Dr. Cuspriilli, que condenaba las aclamaciones que de el antimonio hizo D. Diego Mateo Zapata, medico de los Cardenales Portocarrero y Borja, s.l., 1702.*

³⁰ Assin de Palacios y Ongoz, José, *Examen de la verdad en el tribunal de la razón: defensa de la tryaca moderna en la mejor fabrica de los trociscos de vivoras: respondiendo a la impugnación que haze la consulta, en defensa de la*

antigua... (Zaragoza: herederos de Diego Larumbe, 1724). Miguel Melero Jiménez, *Examen pacífica de la alegación apologetica medico-physics, que publico contra unas dudas... Christoval Ruis de Pedrosa y Luque...: crisis medico-chymica...: primera parte / que formaba D. Miguel Melero Ximenez* (Córdoba: Diego de Valverde y Leiva, 1699).

³¹ Juan Bautista Ramírez de Arellano y Almansa, *Cirujia, ciencia y metodo racional : teorica y practica de las curaciones en el cuerpo humano, con el tratado de los prognosticos, medicamentos y morbogalico, y observaciones..., en el tratado de las heridas penetrantes en el pecho* (Madrid: Antonio González de Reyes, 1680). Jerónimo de Ayala, *Principios de cirugia utiles y prouechosos para que puedan aprouecharse los principiantes en esta facultad* (Valencia: Vicente Cabrera, 1693). Felipe de Borbón, *Medicina y cirugia domestica* (Madrid: Antonio González de Reyes, 1693).

³² Jerónimo de la Fuente Pierola, *Tyrocinio pharmacopeo, methodo medico y chymico en el qual se contienen los canones de Joanes Mesue damasceno... y un antidotario medico y chimico* (Madrid: Antonio de Zafra, 1683). Luís de Oviedo, *Methodo de la colección y reposición de las medicinas simples, de su corrección y preparacion y de la composición de los letargos, yaravies, píldoras, tropismos y azeites que estan en uso. va añadido en algunos lugares el tercer libro y todo el quarto libro: en que se trata de la composicion de los unguentos, cerotos, emplastos...* (Madrid: Melchor Álvarez, 1692). Juan de Vidós, *Medicina y cirugia racional y espagirica sin obra manual de fuego ni hierro, purificada con el fuego de la razón y experiencia para alivio de los pobres enfermos* (Zaragoza: Gerónimo Soriano, 1690).

³³ Tasa de los libros de la botica de Bartolomé Nieto, vecino de Salamanca y boticario, 31-I-1678: "1 Luis de Ubiedo muy viejo: 6 reales; 1 Esteban Villa: 6 reales; Mesue: 10 reales", Archivo Histórico provincial de Salamanca, bundle 3023. Ángel Weruaga Prieto, *Libros y lectura en Salamanca. Del Barroco a la Ilustración, 1650-1725* (Salamanca: Junta de Castilla-León, 1993): 207-8.

³⁴ Cristóbal Tixedas, *Verdad defendida y respuesta de Fileatro, a la carta medico-chymica, que contra los Meducos de la Junta, de la Corte, y contra todos los Galenicos, le escrivio el Doctor Medico-Chymico D. Juan de Cabriada* (Barcelona: Antonio y Balthasar Ferrer, 1680): *Dedicatoria al muy Illustre Señor D. Ramon de Oms...*

³⁵ Justo Delgado de Vera 1687, 111

³⁶ Justo Delgado de Vera 1687, 109.

³⁷ Chiara Crisciani and Michela Pereira, "Black Death and golden remedies. Some remarks on Alchemy and the Plague," in *The Regulation of Evil. Social and Cultural Attitudes to Epidemics in the Late Middle Ages*, ed. Agostino Paravicini and Francesco Santi (Brepols: Turnhout, 1998): 7-40.

³⁸ Dionisio de Cardona, *Sobre la química...* (Madrid: n.p., 1694).

³⁹ Luis Alderete y Soto 1681, 3.

⁴⁰ As for alchemists, spagyrist, *medico-chymicos*, and *chimico-medicos*, see López Pérez, Miguel. *Alquimia, Terapéutica y Sanidad en la España de los Austrias Menores*. PhDiss. Madrid, Universidad Complutense, 2001, 377-427.

⁴¹ E.g. Francis Anthony and Alejandro Quintilio. José Rodríguez Guerrero, "La Primera Gran Red Comercial de un Medicamento chymico: Vittorio Algarotti y su Quintaesencia del Oro Medicinal," *Azogue* 6 (2009): 12-67, <http://www.revistaazogue.com/Azogue6-4.pdf>.

⁴² E.g.: Occult qualities, humidus radicalis, matter elements, heat, fire...

⁴³ Francisco de Elcarte, *Statera medicinae selectae* (Zaragoza: Emmanuel Roman, 1687).

⁴⁴ Anonymous, *Desagravio de la verdad ofendida y examen de la mentira disfrazada, a la luz de la Razón y el toque del desengaño* (n.p.: n.p., n.d.).

⁴⁵ Tomás de Murillo, *Favores de Dios ministrados por Hypocrates y Galeno su interprete...: grandezas y utilidades de la Medicina griega, muy utiles para todos estados y facultades. Corrige, enseña, enmienda y advierte verdades innegables sobre el uso de las sangrias a Don Agustín Gonçalo Bustos de Olmedillo, medico inventor de novedades y de opiniones dañosissimas y contrarias a la salud de todos los mortales* (Madrid: Imprenta Real, 1670).

⁴⁶ Tomás de Murillo 1670, 225.

⁴⁷ José M. López Piñero, "Juan de Cabriada y el movimiento *novator* de finales del siglo XVII. Reconsideración después de treinta años," *Asclepio* XLV-1 (1993): 3-53.

⁴⁸ Julio M. Rossi, *Crisis physico-medica sobre el impero Laberinto Apolíneo* (Granada: Imprenta de la Santísima Trinidad, 1701): 55: "And I say you again: You must be puzzled that you, who never have set foot on the doorstep of the Society, ignoring the experiments that they are doing with a rational method, and having not knowledge on the matter, have the daring of call them mere Apothecaries and not notable spagyrists..."

⁴⁹ Francisco Barras de Aragón, *Los estudios anatómicos durante el siglo XVIII en la Sociedad Regia de Medicina Sevillana* (Sevilla: Jiménez y Molina, 1919). Francisco Barras de Aragón, *Noticia sobre los estudios botánicos en la Sociedad Médica de Sevilla* (Sevilla: Jiménez y Molina, 1919). Francisco Barras de Aragón, "La Regia Sociedad de Medicina y demás ciencias de Sevilla y el doctor Cerviz," *Boletín de la Universidad de Madrid* 2 (1930): 354-79. Francisco Barras de Aragón, "Actividad científica de la Sociedad de Medicina y Ciencias de Sevilla en el siglo XVIII," *Anales de la Universidad de Madrid* 1 (1932): 32-44. José Arriaga Cantullera, "Historia de la Regia Sociedad de Medicina y demás ciencias de Sevilla," *Archivo Hispalense* 14 (1951): 372-411. Francisco Aguilar Piñal, *La Real Academia Sevillana de Buenas Letras en el siglo XVIII* (Madrid: CSIC, 1966). Francisco Hermosilla Rodríguez and Enrique Alcina Quesada, "Corrección de obras y suplantación de autores a través de la comunicación científico-médica (Roche, Feijoo y la Regia Sociedad de Medicina de Sevilla," in *Actas del IX Congreso Nacional de Historia de la Medicina* (Zaragoza, 21-23 septiembre, 1989), (Zaragoza: Ayuntamiento de Zaragoza, Servicio de Acción Cultural-Universidad de Zaragoza Servicio de Publicaciones, 1991): 953-956. Manuel Valera Candel and Carlos López Fernández, "Giuseppe Cerviz, Guillaume Jacobe y las relaciones entre la Regia Sociedad de Medicina y demás ciencias de Sevilla y la Royal Society of London en 1736," *Dynamis* 18 (1998): 377-426.

⁵⁰ Jacob Le Mort, *Chymia, rationibus et experimentis auctoribus instructa* (Lugduni Batavorum: Petrum van der Aa, 1668).

⁵¹ Juan del Castillo, *Pharmacopœa universa medicamenta in officinis pharmaceuticis visitata complectens & explicans* (Cádiz: Juan de Borja, 1622).

⁵² Matías Beinza, *Discurso sobre los polvos universales purgantes. Discurso de los universales polvos purgantes. De la quinta esencia de el Sol Chímico con los quales sin sangría se pueden curar todas las enfermedades que se tienen por curables. Con una adición sobre el Arte Chímica. Discurso tercero en que se demuestra qual se ha de sangrar y qual purgar. Epilogo del discurso hecho sobre las virtudes, propiedades y aplicación de los polvos de la quinta esencia Del sol chímico* (Bayona: Antonio Fauvet, 1680).

⁵³ Mar Rey-Bueno, “*La Mayson pour distiller des eaues* at El Escorial: Alchemy and Medicine at the Court of Philip II, 1556-1598”, in Teresa Huguet-Termes et alii (eds), *Health and Medicine in Hapsburg Spain. Agents, Practices, Representations*, London: The Wellcome Trust Centre for the History of Medicine at UCL, 2009, 26-39.

⁵⁴ Jean-Paul Contant remains indispensable: *L'enseignement de la chimie au Jardin Royal des Plantes de Paris*, Cahors: Coueslan, 1952. I am thankful to Didier Kahn for the following commentary to my assertion: “But consider that, as early as 1600, half of the French royal physicians were Paracelsians or, at least, practiced chemical medicine. And Jean Beguin, “aumônier du Roi”, taught medical chemistry in Paris from 1608 up to his death ca. 1618—and his lectures were attended even by members of the French nobility. Thus there was a discreet, but effective Royal patronage for alchemy and medical chemistry in France under the reign of Henry IV. Thereafter, the minority of Louis XIII rendered things more problematic, but even young Louis XIII had indeed Royal spagyric physicians as well as traditional ones, and we know that after Beguin’s death, Etienne de Clave did teach again medical chemistry in Paris since about 1623 up to August 1624, and then from 1629 up to at least 1635 [...] On La Brosse, see <http://www.bium.univ-paris5.fr/histmed/medica/brosse.htm>.”

⁵⁵ Felipe II, *Pragmatica sobre la orden que se ha de tener en el examen de los médicos, cirujanos y boticarios* (Alcalá: Iuan Iñiguez de Lequerica, 1588). Felipe II, *Prematica en que se da nueva orden en el examē de los medicos y cirujanos y boticarios* (Madrid: Pedro Madrigal, 1593).

⁵⁶ Miguel Eugenio Muñoz, *Recopilación de las leyes, pragmaticas reales, decretos y acuerdos del Real Proto-Medicato* (Valencia: viuda de Antonio Bordazar, 1751): 107-49.

⁵⁷ Juan José García Romero, *Triumpho de la Regia Sociedad Hispalense y Dialogo de Medicina, con un Appendix impugnatorio, ecterminando veinte y tres Propositiones, que el Doct. D. Joseph Gazola Veronés, Medico Cesareo, y Academista Aletofilo, escribe en un breve Compendio, con el título: El mundo engañado de los falsos medicos*” (Sevilla: Imprenta Real de D. Francisco de Leefdael, 1737).

⁵⁸ Alonso López Cornejo 1697.

⁵⁹ Alonso López Cornejo 1697, 13, “Quaestio 26”.

⁶⁰ Miguel Melero Jiménez 1697. Alonso López Cornejo 1607, 13, "Quaestio 27".

⁶¹ Cristóbal Luque, *Apolíneo caduceo haze concordia entre las dos opuestas opiniones, una que aprueba las consultas de los médicos para la curación de las graves enfermedades, otra que las reprueba* (Sevilla, Lucas Martín de Hermosilla, 1694).

⁶² Cristóbal Luque 1694, 246-7.

⁶³ Cristóbal Luque 1694, 249.

⁶⁴ Juan José García Romero 1737, 3.

⁶⁵ Juan José García Romero 1737, 7.

⁶⁶ Juan José García Romero 1737, 7-8.

⁶⁷ Juan José García Romero 1737, 8.

⁶⁸ Luís Alderete y Soto, Luis, *Señor, Don Luis de Aldrete y Soto dize que ha llegado a su notizia que cierto medico de camara ha asegurado que en el papel que el suplicante escribió de la luz de la medicina...* (Madrid, n.p., n.d.).

⁶⁹ Fr. Andrés de Villacastín, *La Chymica despreciada...*, 197.

⁷⁰ Fr. Andrés de Villacastín, *La Chymica despreciada...*, 278.

⁷¹ Fr. Andrés de Villacastín, *Copia de la carta que el Doctor Pedro Aqueña... ha escrito a un cauallero, su amigo de la ciudad de Sasser... respondiendole a lo que se le preguntaua sobre el hecho del P. Angeleres y Real Protomedicato de Castilla*, Madrid, 1693. As for irregular medical practitioners: Margaret Pelling and Charles Webster, "Medical Practitioners", in Charles Webster (ed), *Health, Medicine and Mortality in the sixteenth century*, Cambridge: Cambridge University Press, 1979, 165-235. Margaret Pelling, "The common lot: Sicknes, Medical occupations and the urban poor in Early Modern England", *Bulletin of the History of Medicine*, 74-2 (1998): 357-79. Margaret Pelling, "Medical conflicts in Early Modern London: Patronage, Physicians, and irregular practitioners 1550-1640", Oxford: Clarendon press, 2003.

⁷² Francisco Ruiz, *Discurso sobre la composición del azucar rosado solutivo, defendiendo las Ordinaciones Reales y las del Collegio de Médicos y Cirujanos, atendiendo al beneficio común de la salud*, Zaragoza, Pedro Verges, 1625, 7 and 10. Pedro Aqueña also criticized Protomedicato for the same thing: "As well as the obligation of these gentlemen was the monitoring in reforming the introduction of false *pseudochimicos* sects who, without shame and fear, they get little healers has damaging public health and public treasury." Pedro Aqueña y Mossa, *Copia de la carta que el Doctor Pedro Aqueña... ha escrito a un cauallero, su amigo de la ciudad de Sasser... respondiendole a lo que se le preguntaua sobre el hecho del P. Angeleres y Real Protomedicato de Castilla*, Madrid, 1693, 15.

⁷³ Matías Beinza, *Discurso sobre los polvos universales purgantes. Discurso de los universales polvos purgantes. De la quinta esencia de el Sol Chimico con los quales sin sangria se pueden curar todas las enfermedades que se tienen por curables. Con una adición sobre el Arte Chimica. Discurso tercero en que se demuestra qual se ha de sangrar y qual purgar. Epilogo del discurso hecho sobre las virtudes, propiedades y aplicación de los polvos de la quinta esencia Del sol chimico*, Bayona, Antonio Fauvet, 1680, 56.

⁷⁴ Gazola was hated by several Spanish figures, such as Diego Matheo Zapata. Diego Matheo Zapata, *Verdadera apología en defensa de la Medicina Racional Philosophica y deuida respuesta a los entusiasmos médicos que publico en esta Corte D. Joseph Gazola Veronense, Archisoplón de las Estrellas*, Madrid, Antonio de Zafra, 1691.

⁷⁵ Madrid, 1686, Madrid, 1729.

⁷⁶ Guiseppe Gazola, *El mundo engañado...*, "De la dificultad de la Medicina, i del engaño de las más famosas sectas de médicos, i particularmente de los Dogmáticos, sequaces de los Antiguos", Cap. III, 73-106.

⁷⁷ Guiseppe Gazola, *El mundo engañado...*, 79.

⁷⁸ Guiseppe Gazola, *El mundo engañado...*, 153.

⁷⁹ Andrés Dávila y Heredia, *Para honra y gloria de dios responde a la apología, en defensa de la medicina substancial, y universal del agua de la vida escrita por el Licenciado Don Luis Amigo y Beltran en que se prueba que no hay medicina universal*, 1682, 2v.

⁸⁰⁸⁰ Juan de Cabriada, *Carta filosofica, medico-chymica...*, Madrid, Lucas Antonio de Bedmar y Baldivia, 1687, 37-38.

⁸¹ Andrés Gámez, *Discurso filosofico...* Introducción.

⁸² Andrés Gámez, *Censura sencilla de el papel que publico en esta Corte el Reverendo Padre Fray buenaventura angeleres, con el título de desengaño de la Filosofia Real, y desempeño de la Medicina sanativa* (Madrid: Antonio Román, 1694), 6-7.

⁸³ Andrés de Villacastín, *La Chymica despreciada, D. Luys de Aldrete y Soto persegvido, defendida y defendido* (Granada: Antonio Torrubia, 1687): 198.

⁸⁴ Diego de Aroza, *Tesoro de las excelencias y utilidades de la medicina y espejo del prudente y sabio medico: enriquecido y iluminado con varia leccion y principalmente con la vida de Avizena [...] y un capitulo de medicos y boticarios y cirujhanos; con unos documentos al arte de boticarios...*, (Lérida: Juan Nogués, 1668), 292

⁸⁵ Moyses Charas, *Pharmacopée royale, galénique et chymique* (Lugduni: Du Four, 1684), 22.

⁸⁶ Andrés de Villacastín 1687, 20.

⁸⁷ Pedro de Godoy, *Discurso serio jocoso sobre la nueva invención del Agua de la Vida y sus apologías* (Madrid: Mantua Carpetana, 1682), 3.

⁸⁸ Juan de Vidós 1686, 260-1.

FONTENELLE, THE IDEA OF SCIENCE AND THE SPIRIT OF CHEMISTRY

LUC PETERSCHMITT,
UNIVERSITÉ DE LILLE-3, FONTENELLE

Generally, commentators describe Fontenelle's attitude towards chemistry by quoting his comparison between Boyle and Duclos, opposing the clarity of physics and the confusion of chemistry. This allows to underline how Fontenelle went wrong in his conception of chemistry – since, for example he opposes two chemists, the one as obscure as the other, according to Fontenelle's own criterion¹. Of course, such criticisms are not false. But in this paper, I would like to examine more closely Fontenelle's position. This will lead me to qualify the standard description of Fontenelle. Let us read once again this famous declaration:

“The spirit of chemistry is more confused, more shrouded; it has more resemblance to the mixed bodies, in which the principles are entangled one with another, the spirit of Physics is clearer, simpler, more disentangled; last it goes back to the first origins whereas the other does not go all the way.”²

It is not certain that Fontenelle clearly and definitively dismiss chemistry as a science in this declaration. In fact Fontenelle compares two kinds of spirit; this comparison shows that there are degrees of confusion and degrees of clarity. But he does not say that the spirit of chemistry is utterly confused and that the spirit of physics is completely clear³. If we take seriously this remark, two questions arise:

- 1/ Why the spirit of chemistry is not as clear, nor as developed as the spirit of physics?
- 2/ To Fontenelle, as it is only a question of degrees of clarity, is it possible for chemistry to become a science as physics is?

The standard answer to these questions would be: chemistry cannot be a genuine science, because, if it becomes a true science, then it is physics⁴.

Once again, such an answer is not completely false; but my claim is that this answer is not complete, and misses a whole part of Fontenelle's position. In order to prove this claim, I will examine the *Histoire de l'Académie Royale des Sciences*. Such a history is without doubt a fontenellian work. But Fontenelle writes as the Secretary of the Académie. This forces him to be more neutral than he would have been, or that he is in his own books. At least, this is the sense of some of his declarations. For example, here is what he writes to Castel:

"The whole advantage that I may have, which is nevertheless rare enough, is that I have no prejudice in favor of any system and that I will not reject an opinion because it is contrary to mine."⁵

At a first glance, such a declaration does not seem to fit the comparison between physics and chemistry. Indeed, saying the he will not reject the opinions contrary to his own does not mean that he will accept them uncritically, but rather that he gives a fair account of them (before giving a criticism). Indeed this history is supposed to give a presentation to the lay educated people⁶. This history may be read as the description of chemistry as an emerging science that has to face difficulties, which render its constitution as a science quite problematic. Fontenelle gives an interesting (I do not mean fairly true) account of these difficulties.

Section I: The confused spirit of chemistry

I intend to examine what Fontenelle calls the "confusion" of chemistry. My question is not to know whether his description is true or not⁷. But Fontenelle takes the *cliché* of the clash in sciences⁸. But the way in which Fontenelle sees "old" chemistry will show by contrast to which extent the "new" chemistry may be characterized as a science.

Let us go back to the comparison between Boyle and Duclos:

"M. du Clos, a great chemist, as well as M. Boyle, but whose spirit was maybe more of a chemist, did not find necessary, nor even possible, to reduce this science to principles as clear as figures and motions and he admitted easily the kind of specious obscurity that was established in it." (*Histoire I*, 79)

From this quotation it is obvious that the clarity refers the mechanical concepts and explanations, using figures and motions of particles to explain the phenomena. In opposition, a non-mechanist explanation can be said "obscure". But why, according to Fontenelle, a scientist was ready to admit obscurity? Of course, Duclos refuses the reduction of chemistry to

the mechanical concepts. If he is right, this could mean, to Fontenelle, that chemistry is necessarily obscure. But it is not certain that Fontenelle accepted Duclos' demonstration. Then the question remains. Chemistry is obscure, and it is not a problem for the chemists.

We will see later why chemistry is obscure. The first point is to understand the attitude of the chemists, as this is the main point of the so-called clash in the history of chemistry. Indeed, the opposition between Boyle and Duclos shows that to Fontenelle some chemists at least did not admit such an obscurity. The attitude of the chemists may be explained by the weight of history. They are used to such an obscurity, in which the old chemists took pleasure. But this habit has still effects on the new chemistry. Thus, it is necessary to examine for a while the criticisms against the old chemistry, in order to understand what the new chemistry is. It will allow us to see exactly for what the chemists, including the chemists of the Académie Royale des Sciences may be reproached.

Still in 1736, Fontenelle speaks of an "old habit of mystery" (HARDS, 1736 (1739), 68⁹) – about Stahl who did not seemingly say all that he could have said about marine salt¹⁰. This "mystery" refers to the confusion and darkness of chemistry. And in their turn, darkness and confusion may be "affected" or "artificial"¹¹: there is an unnecessary obscurity. It is to be noted that Fontenelle does not give any explanation. He considers that:

"It is not a long time ago that all reasoning were only some kinds of fictions, which are poetic, lively, animated, pleasant to the imagination, unintelligible and unbearable to the reason." ("Eloge de Guglielmini", HARDS 1710 (1732), 164-165)

Fontenelle adds chemistry was mysterious and quite proud of its obscurity. This situation has for consequence that

"the greatest absurdities were revered thank to the mysterious obscurity in which they were dressed and entrenched against reason." ("Eloge de Lémery", HARDS 17175 (1741), 75)

It is difficult to say that chemistry was a science. However, this conclusion must be qualified. Of course, such a history is not without effects. Fontenelle keeps regretting it. The habit of mystery has not completely disappeared – the best example is Duclos, as read by Fontenelle. But one should be cautious in drawing conclusions. These are only effects or "traces"¹². All the texts that have been mentioned here describe the deplorable state of an old (pseudo-) science. They do not characterize the new chemistry, which is a "science" (even if we still have to understand precisely what this could mean). Nevertheless, if one says that old

chemistry is not a science at all, then the appearance of new chemistry becomes a mystery. Indeed, even in the old chemistry, all is not utterly false. This what Fontenelle explicitly says in the “Eloge de Lémery”:

“Chemistry was until this moment a science, where, as [Lémery] put it, a few truths were disseminated in such a quantity of falsities that they were invisible, and truth and false almost inseparable.” (“Eloge de Lémery”, HARDS 1715 (1741), 75)

This text is notable by its position: according to Fontenelle, Lémery is the chemist who is responsible for the clash between old chemistry and new chemistry. But even in the eloge devoted to Lémery, Fontenelle underlines that he did not create chemistry as a science: chemistry did not become suddenly a real science. And in his account of Homberg’s “Essay de Chymie”, Fontenelle underlines that “all must go through degrees” (HARDS, 1702 (1743), 45). It seems then that the spirit of chemistry is for the moment more confused than the spirit of physics.

Two questions remain:

- 1/ How was it possible for chemistry to be developed?
- 2/ To which extent is it possible for chemistry to be developed as chemistry and not as a physics? According to Fontenelle, does the fact that chemistry becomes a science have for necessary consequence the disappearance as an autonomous science?

Section II: To develop chemistry

The question is now: how chemistry could become a science? Certainly, Lémery introduces a clash in the history of chemistry. However, it is not certain that we should take too seriously the words of Fontenelle saying that he created “a completely new science” (“Eloge de Lémery”, HARDS 1715 (1741), 76). Lémery worked on old chemistry and separated truths from falsities. In fact, Lémery has initiated a new way to be a chemist: in a very broad sense, he initiated a new methodology.

Fontenelle describes Lémery’s work in that way:

“M. Lémery was the first who dissipated the natural and affected darkness of chemistry, who reduced it to clearer and simpler ideas, who abolished the useless barbarism of its language, who promised only what it could do and what he knew it could perform, whence his great success. There is not only rectitude of character, but also a kind of high-mindedness to divest in this way the science that you teach of its false dignity.” (“Eloge de Lémery”, HARDS 1715 (1741), 76)

It is necessary to precise exactly the role of L  mery in this history: he was the first – not the last. It means that if chemistry is during Fontenelle’s time on the way to be a science, it is a consequence of the work of other chemists as well. Indeed, L  mery reduces to ideas which are “simpler” and “clearer” than the ancient chemical ideas: Fontenelle does not say that his work was perfect¹³.

To sum up in one word L  mery’s role, one could say that he was the first chemist to be perfectly honest¹⁴. This honesty is expressed under three different aspects: the clarity of ideas, the clarity of language, and no vain promises. It is easy to see how, in old chemistry, these aspects were linked together. A chemist who had no clear ideas could promise anything, since nobody (maybe including himself) really understood what he meant.

It is not necessary to deal along with the question of promises. The main point is that L  mery, as described by Fontenelle, wanted to be understood: what seems to be new is the search for clarity. Of course, clarity of ideas and clarity of language are tightly linked. Finally, it is only a way to say that, from L  mery, it is possible to know what chemistry is talking about – that is to say to understand the discourse of chemists. The main point is then the clarity of ideas. There is no doubt here: L  mery introduces clear ideas in chemistry because he introduced mechanical considerations in chemistry. But according to Fontenelle, only these considerations are intelligible to us, because they perfectly fit the human way of thinking. L  mery is the first who has really thought in chemistry, because he used the only categories that are really intelligible¹⁵.

But such a decision leads to a second point: thanks to these clarifications, it is possible to know what the chemist is talking about. That is to say that chemistry can rely on facts – since the use of a clear language allows honest and understandable descriptions. This is a second aspect of the development of the spirit of chemistry, and a part of L  mery’s honesty: to seek for certain facts. Fontenelle keeps asking for such facts. But seeking for facts leads to use new tools. One particular tool shows the importance that Fontenelle gives to this way of working: the burning-glass. He writes in his *Eloge de Tschirnaus*:

“He foresaw that bigger and better convex glasses exposed to the Sun would be new furnaces which would give a new chemistry.” (“*Eloge de Tschirnaus*”, *HARDS* 1709 (1732), 120)

Such tools are sometimes said to be “miraculous”. They are supposed to allow a new chemistry, which seems to happen when Homberg used them:

“Homberg was pleased to see that some systems that he had imagined became facts; and what was even more important to him was that he

learned many facts that he would not have guessed. This new sort of furnace gave a new chemistry.” (“Eloge de Homberg”, *HARDS* 1715 (1741), 90)

The big burning glass built by Tschirnaus is the tool of a new science, because it allows to perform and to achieve experiments that could not be done before. Once again, that is what Fontenelle writes in his account of some experiment performed by Homberg with the new burning-glass:

“The fire of the Sun is nothing but the entirely pure matter of light; and what extreme difference should exist between their activities [of the pure matter of light and common fire], between their effects, between a chemistry that has used only one and chemistry that is about to use the other. We can hope, without excessive presumption, an almost new physics, since we have a new key to get into the internal composition of bodies.” (*HARDS*, 1702 (1743), 34)

The physics or the chemistry is only “almost new”. Lémery gave a new chemistry. But the use of the burning-glass may improve this new chemistry in such a way that it will appear as if it was new. The novelty is not methodological: the chemist will have new facts to work on. The use of such tools does not modify the structure of chemistry. The burning-glass is only a more powerful tool of analysis. Ironically enough, Fontenelle does not see the real novelty of Homberg’s use of the burning-glass, as an instrument of synthesis¹⁶. It seems that Fontenelle’s only point is the gathering of new facts¹⁷, which may lead to a renewal of chemistry.

There are reasons to hope that chemistry can become a plain science. The main condition is that the chemists adopt a kind of code of good conduct. This is precisely what Lémery did; this allows a progress in chemistry. This is shown by a last point underlined by Fontenelle in his commentaries. The Académie Royale des Sciences is a place where it is possible to discuss. But these discussions are goods polemics, that is to say sincere, in which everybody seeks the truth, by contrast with the old disputes, which could only be verbal, because of the senseless language of chemistry¹⁸. Discussions in the Académie are polite and they lead to truth – at least, they incline people to seek truth:

“It is a good thing that disputes arise in the Académie, and maybe they are too few. The particular interest to prove what one thinks lash down and excites the love that one has for truth.” (*HARDS*, 1707 (1730), 43¹⁹)

The result of such discussion may be ambiguous. It is not always possible (if it is possible at all) to get to the entire truth²⁰. But this is not a reason to

think that chemistry is not a science; on the contrary, it proves that chemistry and chemists seek a clear conception of the phenomena.

Section III: Chemistry as an effort towards a clear knowledge

From all that we have seen, it appears that chemistry is a science in way of constitution. Certainly, chemistry is on the good way. However, it is far from being able to give a sound system to explain the phenomena it is supposed to explain. Moreover, according to Fontenelle, it is not certain that there are reasons to think that it will be able to do so one day. The chemists have fought against their bad habits. In a sense, and even if there are still traces of old chemistry, the academicians are victorious. But they have also to face another kind of darkness:

“Chemistry is gone out of the mysterious darkness in which false philosophers had shrouded it; but it remains a part of its natural obscurity.”
(HARDS, 1701 (1743), 66)

It is not certain that it is possible to reduce the “natural obscurity”. It is possible to go out of artificial darkness, because it is unnecessary; *a contrario*, this entail that the natural obscurity is necessary. According to Fontenelle, chemistry may always remain unclear – that is to say it may always fail to be perfectly clear. But this does not mean that it is not a science. This appears paradoxical, given Fontenelle criticisms of obscurity. This tension is the tension of the mechanist goal.

Indeed, Fontenelle thinks that the clear ideas Lémery introduced in chemistry are the mechanist ones, using figure and motion of the particles to explain the effects. He was not alone. Guglielmini also tried:

“The true philosophy appeared and began to reduce to the simple corpuscularian mechanics this mysterious chemistry which is so to say so proud of its obscurity.” (“Eloge de Guglielmini”, HARDS 1710 (1732), 164-165)

A perfectly clear chemistry would be a mechanics – it amounts to say that it would not be chemistry. However, if this reduction is not possible, then chemistry may be a science. Paradoxically enough, chemistry would be a science because it is unclear (that is not completely clear). The natural obscurity of chemistry is then an essential obscurity. This is the paradox I will examine now.

Physics in general and chemistry in particular are difficult sciences because of their object. The Preface is particularly clear about that point.

One can consider that the spirit of chemistry is shrouded precisely because of the complication of the chemical phenomena. Sometimes Fontenelle declares that it is “difficult”²¹ to dissipate this obscurity. However this difficulty tends sometimes to pure impossibility:

“After some discussions any question of geometry finds an answer and ends whereas the oldest questions of physics as the one of vacuum and plenum have the deplorable privilege to be eternal.” (“Eloge de De Renau”, HARDS, 1719 (1721), 108)

Fontenelle does not give any chemical example. But there is no reason why chemistry would escape this deplorable privilege. It is not certain that any clarity can penetrate this obscurity, and to dissipate it completely and definitively. Fontenelle marks it out again and again. It is not possible to reason in physical and chemical matters as in geometry:

“If it was possible to reduce chemistry and in general physics to some kind of universal formulas, which would contain all the possible cases as the most sublime questions of geometry are reduced to, it would be possible to foresee the changes that correspond to the diverse suppositions, and often the slightest changes in supposition would be seen to produce great variations in the effects. But physics is too vast and too little known, at least until now, and experiment is the only one to teach us how the conditions can make phenomena vary.” (HARDS, 1706 (1731), 30)

Fontenelle is even clearer (and more pessimistic) a few years later:

“Physics is too complicate to allow us to certainly foresee any effects by the reasoning.” (HARDS, 1710 (1732), 46)

It is not only question of our knowledge: in 1710 he considers that a plain certainty in physics cannot be reached²².

The problem lies in the conditions of natural effects. In physics and chemistry, abstraction is impossible. Any phenomenon supposes a set of necessary conditions, which are difficult to be completely determined because of their number. The least variation in the conditions has major consequences in the effects. It does not mean that there is no law (which would render the idea of science itself non-sensical); but the conditions make difficult to see them. The chemists may be excused of their ignorance or failure:

“One should not despair in chemistry, except about the philosophical stone. The chemists were in general convinced that there was no salt in lime [but du Faye proved that there is one]... since the chemical operations depend sometimes on conditions which can naturally be considered as unimportant,

and to which one may even more naturally not think.” (HARDS, 1724 (1726), 39²³)

This overweight of empirical conditions is the reason why experiments are absolutely necessary. Fontenelle sometimes declares that there is nothing else than experiments and the gathering of facts, which is possible and makes sense in chemistry.

But at the same time, this overweight is the clear cause of the difficulty of experimenting. Fontenelle is not naive; he knows the difficulty of the art of experimenting. All experiments are not conclusive. Fontenelle marks out this point when he presents Poli’s “system” about fermentation and digestion. According to him, there are no acids in the blood. However, Homberg claims to have found acids (although in very small quantity) in blood. And Fontenelle concludes:

“It is a crucial point of Mr. Poli’s system which both philosophers had to discuss, if only the analyses that do not give a product can be opposed to others that give this product. To do that, it would be necessary to disentangle them, to show some deceiving appearance.” (“Eloge de Poli”, HARDS 1714 (1717), 131²⁴)

It is not possible to oppose directly experiments to other ones, nor to a system. At least one time, Fontenelle’s recalling of such a problem seems to be desperate:

“It is regrettable that a great number of delicate experiments remain uncertain. Does one ask too much when he wants at least constant facts?” (“Eloge de Hartsoecker”, HARDS 1725 (1727), 148)

The obscurity of chemistry seems to be necessary. Experiment is necessary, but it is not sufficient, since sometimes at least it cannot really help to decide. And the pure chemical theories, since they are not mechanical, are also obscure.

Seemingly, the only light comes from the use of mechanical concepts. But it is not certain that a perfect mechanism may be found. This is what Fontenelle means when he writes that:

“it is possible to be on the good way, but not on the true one.” (*Histoire*, I, 94)

The problem is the equivalence of the hypothesis: there are always diverse possible mechanical explanations – and experience does not always help to decide. Fontenelle is certain that the mode of production of the phenomena

is mechanical. But it is not certain that it is possible to find out the real hidden mechanisms.

From all this, there are two important conclusions to draw now: chemistry may be an obscure science. But this natural obscurity is not due to the chemist and bad habits of mystery. It is an essential obscurity, because of the practical failure of mechanism. We cannot be sure to describe the true hidden mechanism. Chemistry remains unclear. But the reduction to mechanical concepts is not completely possible. If we take seriously the idea that there are degrees of obscurity, then Fontenelle is committed to describe what I would call a problematic science, that is to say a science which remains necessarily unclear (or better not completely clear).

Fontenelle calls chemistry a science. It is time to examine why. The fact is that he feels some difficulties to keep himself to the “wise pyrrhonism” for which he calls. In principle, the academicians should only propose physical conjectures or hypothesis about the causes of phenomena, since the true mechanisms are hidden:

“Up to now, the Academy has considered nature only piece after piece. No general system, for fear to fall into the inconveniency of hasty systems, which are too pleasant to human spirit and which, once they are established, are opposed to new truths. Today we make sure of a fact, tomorrow of another fact that bears no relation to the former. Conjectures about causes are guessed, but they are only conjectures. Thus the collection that the Academy proposes to the public each year is only composed of bits isolated and independent one from another, of which each one who is the author guaranties facts and experiments and of which the Academy approves the reasonings only with the reservations of a wise pyrrhonism.

Maybe the day will come to join together in one consistent body these scattered limbs, and if they are as we wish, they will join so to say by themselves. Several isolated truths, as soon as they are numerous enough, show so lively their relations and their mutual dependence to spirit that it seems that after they have been isolated with a kind of violence one from another they naturally look for being reunited.” (HARDS 1699 (1732), XIX)

The tone of this text is rather pessimistic. Fontenelle affirms that a systematic physics is possible. But this possibility seems to be merely logical. Indeed, he is not sure, and he cannot be, that what is taken today for a truth is really a truth. But it means that it is impossible to be sure that the experimental part of physics is achieved, or even sufficient to build the systematic physics. Thus the latter is practically impossible. Nevertheless, Fontenelle marks out that it is possible to propose some conjectures, if they are only conjectures about a definite (or limited) set of phenomena.

This is important, as one can guess that it is a way to undercut the impossibility of building a systematic physics. A conjecture may be verified and cautiously generalized, if there are no objections and if it explains other phenomena. It remains that it is only possible to hope that it is true. In fact, the last verification lies in the fact that it is possible to build a perfectly coherent system of nature (since the true propositions so to say call one another). But it is only possible to hope and to wait for such a system. And in principle, the conjectures should not be said true before it exists.

But in his accounts, Fontenelle does not hesitate to say that this or that “system” is true. There is no contradiction here with the fact that in the Preface he underlines that the academicians should not propose a complete physical system. In the account of the memoir, the term “system” refers almost always to a punctual explanation, which may be generalized. But there is no whole system of the world proposed. However, even if these explanations are punctual, it remains that according to Fontenelle they are true, and not only hypotheses. A quick examination of what Fontenelle calls a “system” will show to which extent chemistry can be considered as a science on its own, in spite of its (degree of) obscurity.

There are two kinds of “system”. The first kind is the mechanical ones. For example, Fontenelle concludes his account of the explanation of the metallic vegetation given by Louis Lémery in this way:

“Here is a summary M. Lémery’s system. If it is true, all its consequences should be also true [...] All these consequences, which may be considered as tests of the system have been verified by experiment and it seems that as M. Lémery took happily the right way had only to follow it and to let himself be without pain guided from truth to truth.” (HARDS, 1707 (1730), 34-35)

And in his account of another memoir of Lémery, Fontenelle adds:

“It is rare enough, and by consequence all the more pleasant to know something thoroughly, and to see a system equally sound from all its parts. The system of Lémery’s son on the Mars tree already gave an idea of this philosophical pleasure; here is another example from the same.” (HARDS 1707 (1730), 40)

The explanation is as mechanical as possible: Lémery – according to Fontenelle’s account – tries to describe the genesis of the vegetation using mainly the motions and figures of the parts of acids and metals in presence. It does not mean that he perfectly achieved such an explanation²⁵. This is the sign of the difficulty of chemistry – that is to say

of its obscurity. However, such explanations show that it is possible to give a perfectly intelligible account, i.e. a mechanical account, of a chemical fact. This is the reason why Fontenelle is ready to declare it true.

Nevertheless, the part of obscurity remains. Such a part does not necessarily mean that there is absolutely no explanation. Another method is possible: it is a purely chemical method. In a crucial passage, Fontenelle declares:

“As one is unable to lead chemistry too far towards exact physics and to prevent it from having its own ideas, or rather, its incomprehensible mysteries, M. Lémery the son proposed to clarify the whole question of precipitations, and to shed on it the light of modern philosophy. But he did it only chemically, that is to say he took for principles constant experiments that are used to explain the others.” (HARDS 1711 (1730), 31)

Two points worth to be noted. First, there is a merely chemical method; second, such a method is not opposed to the modern philosophy. To put in another way, it seems that there is a modern chemistry that is not mechanical: it has its own principles, which are certain experiments²⁶. Such a chemical method makes of chemistry a part of modern philosophy. Moreover if it is able to shed light on a question, it means that chemistry construed in this way is not that obscure. It provides its own explanations. That is to say that it is a science. Chemistry is not only an experimental physics collecting mere facts. However, if there is a theoretical level, according to Fontenelle, it is certainly a lower level than the mechanical one. As he underlines it in the text quoted in introduction, chemistry does not analyse its own principles as far as they could be analysed. It is nevertheless a theoretical level; and one may say that the chemical explanations can rely on experiments, which is not the case of the mechanical ones. Of course, experiments may be discussed, so that the certainty of chemistry is not perfect. But this problem concerns also physics. Finally, according to this definition of the chemical method, the opposition between physics and chemistry lies in two ways of conceiving explanation: physics seeks a causal and genetic explanation of a phenomenon whereas chemistry gives (only, according to Fontenelle) a legal explanation (the effect in question can be reduced to empirical regularities). Fontenelle summarizes this opposition in this way. After he has exposed some general principles of hydrostatics, to which chemistry and its precipitations are submitted, he adds:

“It remains all that is properly chemical, which are the solvent corresponding to the mixed bodies, from where comes this correspondence,

which medium or absorbent precipitate what has been dissolved and what does their action consist in.” (HARDS, 1711 (1730), 33)

The two kinds of explanation are clearly enough exposed here: the question may be gathered by groups of two. Each time, the first one is a purely chemical question, and the second asks for a causal explanation and, according to Fontenelle, it needs a mechanical answer.

Chemistry may be true, even if it does not adopt the mechanical principles²⁷. The role of chemistry is to make appear regularities where they are not evident. The role of chemistry is to make appear empirical regularities where they are not evident, provided that the experiments on which the regularities are established are reliable. The way in which Fontenelle deals with affinities makes this point clear. At the same time, it shows that the truth of chemistry is not only the truth of experiments. It is a kind of “systematic” truth, that is to say a properly scientific truth – that gives the same pleasure as the mechanist systems. Thus Fontenelle’s judgement about the affinities is quite qualified, and it worth to be read. In his “Eloge de Geoffroy”, he writes:

“He gave in 1718 a peculiar system and a table of affinity or relations between the diverse substances in chemistry. These affinities saddened some ones, who were afraid that these affinities could be only disguised attractions, all the more dangerous since skillful persons succeeded in giving them seducing appearances; but at last, it has been admitted that it was possible to pass over this scruple and to admit M. Geoffroy’s table, which, when it is well understood and led to a satisfying precision, could become a fundamental law of chemistry and guide successfully all those who work in chemistry.” (“Eloge de Geoffroy”, HARDS, 1731 (1734), 99)

In fact, it is possible to accept affinities because nobody even tries to explain what they are. And this is the very reason of the value of Geoffroy’s “Table des Rapports”:

“Leaving aside the unknown as unknown, and retaining only certain facts, all the chemical experiments prove that one body has more disposition to be united with another one than to be united with a third one, and that this disposition has diverse degrees.” (HARDS, 1718 (1741), 36)

Geoffroy does not explain what these affinities are. Indeed he speaks only of relations: he describes empirical facts. However, the order of his Table gives it its heuristic value. It shows what will happen if diverse substance are blended. Certainly, the detail of the Table may be improved. But this does not really matter here. The bare fact to acknowledge that such a table of relation has a heuristic value amounts to acknowledge that

the idea of seeking relations without trying to explain them makes sense. Of course, one may object that according to Fontenelle, Geoffroy's table only concerns the "operations" of chemistry. However, it is said to be a "fundamental law". This means that is a law on which it is possible to rely to do chemistry. In this sense, Fontenelle clearly marks out that there is a properly chemical theory, which may be generalized, and which do not necessarily requires an explanation. That is why he writes:

"A chemical Table is a pleasant spectacle to the mind, as would be a Table of numbers ordered in accordance with some relations or properties."
(HARDS, 1718 (1740), 37)

There is a quite clear example of such a scientific use of affinities. La Condamine discovered a new kind of metallic vegetation. Fontenelle accounts for his explanation in this way:

"M. de la Condamine esteems in all likelihood that the general cause of this fact is this well-established principle in chemistry according to which a solvent that keeps a metal dissolved leaves it as soon as it is brought into presence of another metal that it dissolves more easily. In that case, nitre left silver to go and dissolve some iron, or the head of the nail, whence the rest followed, which will be studied in more details. However, without going further, it is possible to conclude from this principle that the same experiment will be performed with all the other metals, by substituting a solution of any metal for the solution of silver, and a metal easier than iron to dissolve by the solvent of the metal chosen for iron; This is what M. de la Condamine has found in a great number of experiments variously performed." (HARDS 1731 (1734), 31-32)

It is not possible to interpret the terms "general cause" in a mechanical sense. In this passage, "cause" designs obviously an experimental regularity. But in its turn, such a regularity is a "principle". The word is not to be taken in his traditionnal chemical sense: it does not refer to a component of a mixed body, but it refers to a general law describing the behaviour of bodies. But the most important point in this passage is the way in which Fontenelle evaluates the explanation: it is very much likely. This evaluation is confirmed later in the account. De la Condamine succeeded in performing this experiment in a very small quantity of solution:

"He saw that it happened what he had conjectured in the system we have just accounted for, according to him, and it is one of the greatest pleasures with which Physics may reward the labour of those who endeavour to develop it." (HARDS 1731 (1734), 34)

De la Condamine's system seems to be verified. Fontenelle notes that he "has found" what he was seeking – he does not say that the consequences of the system are "verified" (which is a proof of the system) as in Lémery's case. Fontenelle marks that the theoretical level of chemistry is inferior. However, the logical structure is the same in both cases (so that Fontenelle's reservation here may appear as rhetorical). And once again, the pleasure is the very same as the pleasure due to Lémery's explanation of metallic vegetations. Thus there is no reason to think that one system would be less true than the other, even if they are not on the same theoretical level.

Certainly, if the mechanical explanation lacks or fails, the science is not complete. Precisely, an explanation is missing, which would make completely clear all what happens. However, it does not mean that it is not science at all. This is what Fontenelle means when he writes, four years before Geoffroy's Table, in his "Eloge de Poli", who criticized mechanism:

"It is not possible to leave aside the corpuscularian philosophy without falling into thoughts that are, so to say, specious, high, brilliant, but that lack clarity; this defect does not spoil everything." ("Eloge de Poli", HARDS 1714 (1717), 131)

Now it is possible to interpret fully Fontenelle's remarks about the spirit of chemistry. As noted in introduction, it is absolutely crucial to pay attention to the question of degrees of clarity or confusion. Even if chemistry without mechanism remains chemistry, it is not altogether clear; but on the other hand, the least that we can say is that it is not certain that the hidden mechanisms of nature may be discovered. Fontenelle became aware of this. It may explain the rather pessimistic accents of the Preface about physics and chemistry, which should mainly collect facts. However this pessimistic tone is not necessarily to be taken as Fontenelle's last word on chemistry, nor even the most interesting one. If we take in account this twofold level of scientificity, something more interesting appears, which may serve as a clarification of the opposition between the spirit of physics and the spirit of chemistry. The former adds to the consideration of phenomena something of the spirit of geometry, defines as the search for order, clarity, precision, exactness²⁸. In that sense, the spirit of physics may be the expression of a demand for accuracy and clarity. Even if it may appear paradoxical, this demand leaves a room for chemistry, since what Fontenelle takes for a perfect clarity (a complete mechanist explanation of all natural effects) is in fact or practically impossible. This requirement shows the obscurity of chemistry, and makes it appear as a necessary obscurity. At the same time, it is a kind of

epistemological goad, encouraging chemists to continue: there is always something to explain. Secondly, chemistry explains natural effects in its own way. It means that if chemistry does not fully analyze the bodies, it produces nevertheless analyzes. Maybe it does not go to the end (that is the very last term of a possible analysis), but it goes somewhere. Fontenelle's problem is to understand where it goes: what kind of science of principles does chemistry claim to be?

From the point of view of the history of chemistry, Fontenelle certainly went wrong. As underlined by B. Joly, Geoffroy refused Lémery's mechanism, and then to fulfill Fontenelle's demand. But, B. Joly adds, "it is precisely because he drew upon the alchemical tradition and maintained contacts with then English and German chemists that Cartesianism did not interest him and that he was the crafter of a chemistry of affinities that would leave its stamp upon the whole of the eighteenth century"²⁹. But there is another way to judge Fontenelle's remarks on chemistry, from a more philosophical standpoint. Fontenelle just wants to understand what is going on – in chemistry as well as in mathematics; and he wants the scientists, including the chemists, to make all their possible to be understood. I guess that such a demand is not to be criticized.

Notes

¹ See for example Bernard Joly, "Chimie et mécanisme dans la nouvelle Académie royale des sciences : les débats entre Louis Lémery et Etienne-François Geoffroy", *Methodos*, 8 (2008), "Chimie et mécanisme à l'âge classique", <http://methodos.revues.org/document1403.html>.

² *Histoire de l'Académie Royale des Sciences depuis son établissement en 1666 jusqu'à 1686*, Paris: 1733, tome 1, pp. 80-81 (hereafter *Histoire* followed by the indication of the tome and page). All translations into english are mine.

³ One may add that, after all, if one consider that the spirit of physics is completely clear, to say that the spirit of chemistry is more confused may not be an important criticism; and, reciprocally, if one consider that the spirit of chemistry is completely confused, to say that the spirit of physics is clearer is not necessarily a genuine compliment

⁴ As B. Joly noted it, "Lémery wanted to insert mechanism into the very core of chemistry, which is an impossible undertaking; it is necessary, in order to be a mechanist, to leave chemistry and to interpret its phenomena in terms of physics" (Bernard Joly, "Quarrels between Etienne-François Geoffroy and Louis Lémery at the Académie Royale des Sciences in the Early Eighteenth Century : Mechanism and Alchemy", in *Chymists and Chymistry, Studies in the History of Alchemy and Early Modern Chemistry*, ed. Lawrence M. Principe (Canton, MA: Science History Publications/Chemical Heritage Foundation, 2007), 214.

⁵ Lettre au P. Castel, 07 août 1728, cit. by Leonard M. Marsak, *Bernard de Fontenelle: The Idea of Science in the French Enlightenment*, (Philadelphia: American Philosophical Society, 1959), 39. This fits well the description of the role of the secretary of the institution as Fontenelle describes it in his “Eloge de Duhamel”: “the Academy needed a secretary who understood and could speak the languages of the different savants: the language of a chemist for example, and that of an astronomer, who could be their interpreter for the public, who could give to such difficult and abstract matters a certain clarity and a certain style [...], and finally who was by his temperament exempt from all partiality and apt to give a disinterested account of the academical disputes” (“Eloge de Duhamel”, *Histoire de l’Académie Royale des Sciences, avec les Mémoires de mathématiques et de physique pour la même année, tirés des Registres de l’Académie*, 1706 (1731), 145 (hereafter HARDs, followed by the year and the date of publication). Of course, Fontenelle describes the talents of Duhamel. But as S. Mazauric puts it, “one may rightly wonder if whether consciously or not, he does not draw his own portrait, as well as the portrait of the first secretary of the Académie des Sciences” (Simone Mazauric *Fontenelle et l’invention de l’histoire des sciences à l’aube des Lumières*, (Paris: Fayard, 2007), 145).

⁶ See HARDs 1699 (1732), Preface, II: “On all topics [...], our aim was that [the *History*] should be understandable by all those who have only a mediocre smattering of mathematics and physics”; and about the *Eloges*, Fontenelle writes: “Since the Académie Royale des Sciences was renewed in 1699, it published each year one volume, untitled *Histoire*, and there are thirty-six of them. As they are fulfilled of infinity of things that are too high for all readers, so that they are of no use for them, several persons asked that what everybody could understand and did not belong to any science represented in the Academy should be separated. Nothing is more appropriate that the History of the Renewal of the Academy in 1699, contained in the first published volume, the general preface that was also in this volume and the historical *Eloges* of the Academicians died since the renewal, as they were imprinted in the histories for each year” (*Eloges des Académiciens, avec l’histoire de l’Académie Royale des Sciences en M.DC.XCIX., avec un discours préliminaire sur l’utilité des Mathématiques*, La Haye, 1740, tome 1, Avertissement).

⁷ See Lawrence M. Principe, “A Revolution Nobody Noticed? Changes in Early Eighteenth Century Chymistry”, in *New Narratives in Eighteenth Century Chemistry: Contributions from the first Francis Bacon Workshop 21-23 April 2005*, ed. Lawrence M. Principe (Dordrecht: Springer, 2007), 1-22.

⁸ See Simone Mazauric, *op. cit.*, p. 43; however, we will see that this comment must be qualified.

⁹ See also the “Eloge de Guglielmini”, quoted below.

¹⁰ It is not question here of the fact that the chemists used to keep some secrets. Fontenelle knows this habit, and does not necessarily criticize it. For example, in his *Eloge de Lémery*, Fontenelle notes that “he did not doubt that he was allowed to keep for his personal use a small part of all the treasures that he generously gave to the public” (“Eloge de Lémery”, HARDs 1715 (1741), 77).

¹¹ See quotations below.

¹² See “Eloge de Guglielmini”: “One must confess that in the works of some chemists there remain traces of its old poetry, almost voluntary unions, fights grounded only on enmity and some others that do not fit with a strict mechanism” (“Eloge de Guglielmini”, HARDS 1710 (1732), 165).

¹³ It is then necessary to qualify Simone Mazaauric’s account of Fontenelle’s conception of the history of chemistry: she insists too much on the clash introduced by Lémery, as if chemistry became a plain science only toward the end of the seventeenth century (see S. Mazaauric, *op. cit.*, 325-327). Once again, Fontenelle thinks that all must pass by degrees: there is something true in old chemistry, a kind of kernel, from which it is possible to develop chemistry as a science in the plain sense.

¹⁴ See for example Fontenelle’s “account” of Lémery’s *Traité de l’Antimoine*: “exactness and sincerity, so uncommon until now in chemistry, raise the value of this work” (HARDS, 1706 (1731), 41).

¹⁵ To get into the details of this theory of knowledge is beyond the scope of the present essay; S. Mazaauric gives a good account of this anthropological (not metaphysical) theory – see S. Mazaauric *op. cit.*, 239 ss.

¹⁶ See Lawrence M. Principe, “Wilhelm Homberg et la chimie de la lumière ” *Methodos*, 8 (2008), “Chimie et mécanisme à l’âge classique”, <http://methodos.revues.org/document1223.html>.

¹⁷ After all that seems to be in accordance with his claims in the Preface: The more we have reason to hope that [future] will be happy, the more we have today to consider that the sciences, at least physics, are new-born. Thus the Academy contents itself for the moment with collecting as many observations and well-established facts as possible, which may be one day the grounds of a system, because systematic physics has to wait for the experimental physics to be bale to give it the necessary materials to erect its buildings” (HARDS 1699 (1732), Preface, XVIII). However, there is one crucial difference: in the passages that we are reading, Fontenelle suggests that the new chemistry exists. One could consider that the Preface describes the state of knowledge before the invention of the big burning-glass. It would signify that a progress is real in chemistry, thank to this kind of tools.

¹⁸ See the “Eloge de Lémery” (HARDS 1715 (1741), 75).

¹⁹ Interestingly enough Fontenelle writes this about a very long discussion opposing Geoffroy and Louis Lémery and engaging the status of explanation in chemistry – for a detailed account of this polemic, see B. Joly, “Quarrels...”, *passim*.

²⁰ Even when the chemists agree on something, it is not a clear proof of its truth (and reciprocally of course, everything that is discussed is not false). For example, Fontenelle underlines that what passed for a paradox may become a so common truth that one can hardly imagine that it has been discussed (see HARDS 1720 (1722), 42). But elsewhere, he writes that somebody who contests anything that is established has to use the strongest proofs (see HARDS 1732 (1735), 52). A successful contestation of a largely accepted statement is possible. This implies

that it is not possible to conclude from the agreement to the truth: it is not possible to be absolutely certain that we know a physical truth.

²¹ In a passage where Fontenelle opposes once again the artificial obscurity and the natural obscurity, he declares that “the natural obscurity remains at least in part and it is the more difficult to dissipate” (HARDS, 1702 (1743), 45).

²² In the “Eloge de De Renau”, Fontenelle mentions a “natural” uncertainty of physics, meaning thereby an essential uncertainty – see HARDS 1719 (1721), 108.

²³ But then to forget a condition or to fail to take it in account is not really a fault. This is what Fontenelle writes about Lémery, who proposed a false relation between to salts: “His calculation must be corrected, and he corrects it, but we do not expose this detail, what is important is the discovery, and what is even more important is the avowal of the fault, if it is a fault” (HARDS, 1736 (1739), 63).

²⁴ However, in his account of Homberg’s experiments, Fontenelle does not express any doubt about their result. Here is the way he presents them: “although there is nothing more admitted in ordinary language than the acids if blood, of stomach etc. all the philosophers are not convinced that they exist and it is physical problem that still asks for a solution. Homberg’s experiments and reasoning solve it in favour of their existence [...] The experiments are even more decisive” (HARDS 1712 (1731), 45).

²⁵ For example, a reference to the “onctuousity” is supposed to explain why some particles adhere to the glass. One can hardly see how such a property may be termed “mechanical” – see HARDS 1707 (1730), 33.

²⁶ This definition is not so far from Homberg’s preliminary declarations about the chemical principles: “In the first signification, the principle of chemistry are in general the principles of physics ...[but] we have not been able yet to establish anything incontestable as to the figure, order and motion of the primary matters; now since chemical physics, which consists only in experiments and the exposition of facts, seeks only sure truth, it has established a second sort of principles, more material and sensible ones, whereby it claims to explain easily and in its way its own operations, and to know thereby more distinctly the bodies it studies by its analysis” ((Homberg, “Essays de chimie”, *Mémoires de l’Académie Royale des Sciences*, 1702 (1743), 33) – for a commentary of this passage, see Rémi Franckowiak and Luc Peterschmitt, “La chimie de Homberg: une vérité certaine dans une physique contestable”, *Early Science and Medicine*, 10 (2005), 68-76. Ironically enough, in his account, Fontenelle welcomes a new chemistry, but he nevertheless notes that these chemical principles are not enough tied with the physical ones – see HARDS 1702 (1743), 45.

²⁷ Once again, there is some irony here. In the memoir of which we read the beginning of the account, Lémery gives or he tries to give a mechanical explanation. And Fontenelle exposes it as well in his account – it is true that it is only a part of the memoir – see HARDS, 1711 (1730), 33 ss.).

²⁸ See HARDS 1699 (1732), XII.

²⁹ B. Joly, “Quarrels...”, 214.

“THE GREAT PHILOSOPHICAL WORK”: GEORG ERNST STAHL'S EARLY ALCHEMICAL TEACHING

KEVIN CHANG,
ACADEMIA SINICA (TAIWAN)

The German chemist Georg Ernst Stahl's *Philosophical Principles of Universal Chemistry* is probably the best-known of his works, as it is the only English translation of Stahl's publications, at least as is commonly known.¹ Many students of the history of chemistry may have tried to read it once or twice, although comprehension of Stahl's writing is not always automatic. Odd as it may, few substantive studies on this work have been published.² It is not too difficult to understand. Nearly every student of chemistry wants to study Stahl's theory of phlogiston. When he (or she) finds out that phlogiston is not in this text, he turns away.

This article is a study of the *Philosophical Principles of Universal Chemistry*, especially Stahl's alchemical teaching in it. The Latin and German editions of this book in fact comprised three works. The main work was a chemical textbook. The textbook was bound with two short tracts as supplements. The first was an alchemical text by Stahl on the mercuries of metals, the philosopher's stone, and universal medicine. The other was a manuscript by Isaac Hollandus on the salts and oils of metals first published by Stahl. This study will begin with the first supplement, as it directly addresses Stahl's alchemical teaching. It will then discuss the ways in which the supplement relates to the chemical textbook that precedes it. Such a study is important because it sheds light on several important subjects: Stahl's earliest teaching on chrysopoeia and matter theory, his interpretation of the history of alchemy, intellectual milieu in which he placed his own alchemical investigation, and development of his allegiance to Johann Joachim Becher.

The publication of this three-work compilation is a long story.³ It was first published in 1720 in German,⁴ although its preface points out it is

based on a Latin manuscript that has been circulated as a compilation of lecture notes taken by Stahl's students in his chemical classes at Jena in the mid-1680s, when he was teaching as an unsalaried lecturer after he had received his MD in 1684. The Latin basis of this work was published three years later, and the English edition was prepared by Peter Shaw (c. 1694-1763), himself a well-known chemico-medical practitioner, editor, and translator in Britain, and published in 1730. Neither of the translations nor the Latin original was provided by the instructor himself or received his explicit permission.⁵ Later Stahl even regretted the publication of this book. Despite his regret, he never denied that the textbook and its supplements represented his teaching at the beginning of his career.

The title page of Stahl's chrysopoetic supplement states that it is "an Historical and Experimental Inquiry into the Business of Mercurification, or the Mercuries of Metals, Animated Mercury, and the Great Philosophical Work."⁶ The tract consists of three sections. The first section examines what Stahl calls mercurification, the second the philosopher's stone, and the third the universal medicine. The third section, however, was eliminated in Shaw's English edition. The appended tract by Hollandus is also missing in the English edition.

Stahl opens his alchemical tract with a recent dispute. Werner Rolfinck (1599-1673), professor of medicine and chemistry at Jena, doubts the possibility of preparing mercuries from metals. Becher repudiates Rolfinck's doubt with a treatise and provides a method.⁷ Johann Kunckel (1630-1703), Joel Langelott (1617-1680), and Theodor Kerckring (1638/40-1693) further have made the preparation "the common experiments of every trifling chemist."⁸ However, Andreas Cassius (1645-ca. 1700), testing more than five hundred processes that have been proposed, again disputes the possibility of producing the mercuries of bodies. Stahl proposes to resolve those contradictory claims with "experience."⁹

Mercurification, as Stahl explains in the first section, is to extract the metals' mercuries. He first considers the mercurification of gold, and then those of silver, tin, lead, and finally antimony. Consulting a considerable number of authors, Stahl concludes that "running mercury" can be produced from these metals.¹⁰ By referring to mercuries in the plural Stahl obviously implies that every material body, or at least metal, has its own mercury. Despite the differences between the mercuries of individual metals, the chemically extracted mercuries are all of use in, not surprisingly, "their advancement into gold."¹¹ The most effective medium, however, is the animated or philosophical mercury. For its preparation, Stahl refers the reader to the textbook that precedes this supplement.

The second section is where the historical inquiry into the "philosophical great work" comes into place. Stahl's historical authority is the eleventh-century Suidas. According to this Byzantine lexicographer, ancient Egyptians, and later Arabs, were able to create immense wealth with an art of changing base metals into silver and gold. That wealth emboldened the Egyptians to revolt against their Roman rulers. The Roman emperor Dioclesian then ordered to burn all the writings on the aurific art, and to kill all who knew it. However, the knowledge of that art was propagated among the Arabs. After Suida's history Stahl continues with his own. Geber wrote down some of the Arabian knowledge, which became the source for the succeeding ages. Paracelsus was instrumental in spreading that knowledge in Europe. Although Basil Valentine and Isaac Hollandus had written on chrysopoeia earlier, their knowledge was bound in manuscripts. Paracelsus's works, in contrast, circulated much more widely thanks to print.¹²

Then Stahl names three orders or schools of chrysopoeia that came after Paracelsus. The first is the followers of Paracelsus who look to vitriol as the key to the philosopher's stone. Of this school are figures who have become somewhat obscure today, a Jodocus van Rehe (no date), an Electoral Physician of Brandenburg Müller whose manuscript was copied by the Leipzig Professor Friedrich Geisler (1636-1679) for publication, and the respondent of an inaugural dissertation at Jena on universal medicine Adam Gottlob Berlich (fl. 1676-84).¹³ The second school of chrysopoeia places their hope on niter. It is a doctrine championed by Michael Sendivogius (1566-1636), although rigorously speaking he is not its author. According to Stahl, the author is rather the legendary Alexander Seton, who confided his gold-making ability to his new friend Sendivogius, although he kept the method of preparation to himself. After his death Sendivogius married his widow, found a few drams of Tincture in the house. He also took his friend's manuscripts and pretended to be their author. The fundamental proposition of this school is that the primordial substance of the philosopher's stone is dispersed as the air over the world, and serves as the general vegetative and nutrimental matter of vegetables, animals and minerals alike.¹⁴ This primordial substance is thus the so-called aerial niter. Kenelm Digby (1603-1665) and Christopher Grummet are also the proponents of the doctrine of niter.¹⁵

The third order of chrysopoeia is the school of mercury, which Stahl judges has had the greatest number of votaries. The champions of them are Philalethes, von Suchton, Jean d'Espagnet, and the author of the *Marrow of Alchemy*.¹⁶ As mercury is the secret to chrysopoeia they all start with

the purification of mercury, although they differ on the means of performing it. Stahl's textual examination concludes that members of the mercury school all suggest three materials that the great work depends on: philosophical mercury, philosophical gold, and philosophical sulphur.¹⁷ Philosophical mercury is common mercury animated or "impregnated with internal fire or metallic sulphur."¹⁸ Like philosophical mercury philosophical gold is more than common gold. It is, as Stahl teaches in the textbook, gold most highly subtilized, and brought to a degree of fermentative mobility.¹⁹ Stahl does not formally define what philosophical sulphur or metallic sulphur is. At different places of the discussion he either identifies the metallic sulphur as the second earth,²⁰ follows Becher to see the second earth as the sulfurous principle of matter,²¹ or joins [Johannes de] Monte-Snyder (fl. 1678) to regard it as a substance extracted from highly purified and attenuated iron and copper.²²

Stahl finds the school of mercury the most hopeful of the three. For him, the approach with niter appears to have no practical probability of success, even though Becher taught in his *Physica subterranea* that he found the "soul of niter" that could reveal a great secret.²³ The vitriol school is helpful in suggesting the extraction of philosophical sulphur from vitriol. For that, the supposedly pre-Paracelsian author Isaac Hollandus suggests a good method in the second appended tract. Indeed Stahl seems to suggest that if vitriol would play a role in the great work, it is to provide philosophical sulphur.²⁴ Even so, the operation with mercury is "much more certain and successful than that by Vitriol."²⁵

It is a mystery why Shaw left out the section on the universal medicine in his English translation. In this section Stahl studies the teachings that equate the philosopher's stone with the universal medicine. Although this medicine is rare, authors such as Joan Baptiste van Helmont and Guiseppe Francesco Borri (1627-95) suggest its existence.²⁶ It is of course not a medicine just for minerals, but also for humans. To attain its medicinal effects, it cannot exist in the solid form of gold that the philosopher's stone produces. It is rather "*spiritus mercurii*" or a mercurial substance that sheds its fixity so as to gain penetration into body parts and humors.²⁷

Much of the discourse in Stahl's alchemical appendix dwells in accounts of practical chemical processes. One of the few flares of theoretical discussion appears in his digestion of the different accounts of the mercury school. To conceptualize what is at work, Stahl states that after attenuated gold is interwoven among the substance of the rightly prepared mercury, it

changes (*mutabit*) the figure of the [mercury's] particles (*figuram particularum*), and converts (*transformabit*) them into [gold's] own likeness (*similitudinem*); whence the new aggregate, from an alteration made in the state of the former texture of its particles (*textura minimarum*), is changed from a fluid into a solid, from a volatile into a fix'd body, so as from mercury to become a subtile gold.²⁸

This passage assumes that inter-corpuscular collision can "transfigure" mercury particles and alter their texture, thus producing gold. It also assumes that the texture of the particles can determine the fluid or solid phase of the substance. Apparently for the transmutation of mercury to gold, Stahl does not think the difference in their compositions is much an issue. Conceptualizing chrysopoeia at the corpuscular level, Stahl reasons that transmutation can be achieved by altering the figure of mercury's constituent particles and their alignment or texture.

To understand Stahl's corpuscularian matter theory, one needs to rely on the textbook that precedes the alchemical supplement. Indeed the two texts are connected through such theoretical reliance. In the textbook Stahl formulates that the fundamental unit of matter is the undividable atom. The principles of chemistry are simple things (*simplices*), meaning uncompounded, that have determinate figures, sizes and dimensions.²⁹ As is well known, Stahl accepts Becher's scheme of chemical principles that places water and earth as two chief principles of matter. The earth principle can be divided into three kinds—salty, oily, and mercurial—thus reminiscent of the Paracelsian *tria prima*. The second earth especially is the principle of inflammation that has evolved to the trademark, so to speak, of Stahlian chemistry, that is, phlogiston, while the third, mercurial earth, as in the Paracelsian scheme, is the material principle of all metals.³⁰ For Stahl, the three earths in combination form a metal. Gold is a compound of first order, that is, a direct compound of the particles of the principles. It consists of mostly the second and the third earths, a composition following the pseudo-Geberain formulation of gold as a perfection compound of sulphur and mercury. Silver is a compound of mostly the first and the second. All the other metals are compounds of second order or beyond.³¹ For example, iron and copper both are composed of common sulphur and a lot of salty earth.³² The only difference between them is that copper contains less salty earth. For Stahl, the slight difference explains why copper and iron are, as he believes, easily interchangeable, and why they share a lot in their preparations, especially through calcination and what he calls vitriolization.³³ Transmutation from

one species of metal into another is thus for Stahl both theoretically and empirically feasible.

The textbook and the alchemical supplement are also connected via specific subjects. The textbook gives relatively ample space for mercury and gold, subjects that directly relate to the first section of the supplement. Curiously, Stahl discusses mercury, or to be precise, "dry waters or mercuries," in the section on waters, whereas he places the other metals in the section on earths. Mercuries are dry waters because they are mineral fluids that are not humid. In this section Stahl considers whether common mercury is a principle (which he, siding with Becher, tends not to think so), whether it is a metal (which he vaguely approves),³⁴ and the various methods introduced by chymical authors to eliminate the excessive fluidity of mercury to give it the solidity of gold or ordinary metals, methods considered to be essential to make gold from mercury. On the preparation of philosophical mercury, which he continues to deliberate in the supplement, he identifies two ways for preparing it: one proposed by Monte-Snyder that relies on the so-called "Butter of Antimony," and the other by [Eirenaeus] Philalethes and Alexander von Suchten (ca. 1520-1590) that employs "an exceedingly attenuated portion of Gold, that is manifestly disposed to assimilatory Fermentation,"³⁵ that is, the so-called philosophical gold. Stahl carries on the discussion of philosophical gold in the heading on gold (in the section on earths). In conclusion he recommends the "dry method" of von Suchton, Gaston Claveus (or Gaston DuClo), and especially Philalethes.³⁶

Stahl's textbook, representing his lecture course, is, generally speaking, didactic in nature. It lays out the principles of chemistry in two parts. Part I of the textbook (theory) is divided into four sections: the structure of matter, object of chemistry I (destruction and resolution), object of chemistry II (generation and combination), and instruments of chemical operations. Part II (practice) consists also of four sections, which examine salts, sulphurs, waters, and earths respectively. The theoretical sections usually open with general notions and definitions, followed by analyses of the notions or explanations by examples. The section of material structure, for instance, introduces, in addition to the atom and the chemical principles seen above, different orders of material organization that Stahl calls as *mixtum*, *compositum*, and *aggregatum*. A *mixtum* is the compound of the particles of principles, and a *compositum* one of a *mixtum* with an atom or another *mixtum*, while an *aggregatum* is the juxtaposition of homogeneous atoms or compounds. The practical sections, on the other hand, are organized by different headings. The section on waters, for

example, comprises headings on humid waters and "dry waters or merucies." The section on sulphurs is divided into three *articuli* or headings that discuss mineral sulphurs, vegetable sulphurs, and animal sulphurs, respectively. Mineral sulphurs include common sulphur, cinnabar, antimony, sulphur of vitriol, and sulphur of niter. Vegetable sulphurs include resins, distilled vegetable oils and charcoals. Animal sulphurs are fats or greases. Sulphur is then obviously the common name for materials that are easily inflammable. The heading usually begins with the physical and chemical qualities as well as the natural source of the subject. If the subject has been examined by a particular chemical author, he is often identified. Originality and innovation were not the first aim of the textbook. Rather the textbook was to give the students a digest of the knowledge Stahl the instructor accepted, and therefore the investigative parts of the book consist of mostly cross-examinations of different, and sometimes contradictory, accounts of contemporary or earlier chemical authors.

Stahl's chemical textbook and especially its alchemical supplement confirm his early belief in chrysopoeia. It is a belief supported by his corpuscularian matter theory. Material bodies are compounds of chemical principles, and indeed products of organized corpuscles that are ultimately composed of undividable atoms. Although Stahl was uncertain about the precise compositions of mercury and gold, he believed that mercury could turn into gold by inter-corpuscular collision that transfigures and realigns the particles of mercury.

Stahl's alchemical tract gives a sketchy general history of alchemy. He considers Paracelsus to have been the pivotal figure in the Latin West who, thanks the power of newly available printing, renewed and spread in the latest age the art of chrysopoeia handed down from ancient Egyptians and Arabs through the works of Geber. Stahl frames his alchemical tract as a review of the post-Paracelsus schools of alchemical thought. Among the three schools of alchemy, he sided with that of mercury.

It was precisely mercury that was at the center of a recent alchemical dispute that engaged Stahl's intellectual interest. The dispute started between Rolfinck and Becher, and then drew in other figures, including the then well-known chymical figures such as Kunckel and Langelott, who either confirmed or rejected the possibility of mercurification. Stahl's alchemical supplement opened by placing itself in this developing dispute, and aimed to reaffirm the importance of mercury in chrysopoeia and the possibility of mercurification.

Despite his preference for the "dry method" of von Suchten and Philalethes, Stahl's ultimate authority was Johann Joachim Becher

(1635-1682), whom Stahl cited at almost every important place in the heavily documented supplement. He relied especially on four works by Becher, *Physica subterranea* (1669), its supplement *Experimentum chymicum novum* (1671), *Minera arenaria* (1680), and *Chymischer Glücks-hafen* (1682). The last two works especially had just appeared in print a few years ago before Stahl taught his classes in the mid-1680s. It shows how closely Stahl followed upon Becher's works early in his career. He would later choose to fashion himself as a able follower of Becher. This choice is understandable, as in Stahl's formative years Becher was clearly the most internationally renowned chymical figure in the German lands, much more so than his professors at Jena Georg Wolfgang Wedel (1645-1721) and Rudolf Wilhelm Crause (or Krause 1642-1719). Wedel and Crause both were appointed to the medical faculty at Jena shortly after its patriarchal member Rolfinck's death, and, once trained under Franciscus Sylvius (1614-72) at Leyden, they replaced the latter's skepticism about chrysopoeia with outspoken teaching in alchemy and universal medicine.³⁷ They, however, were short of Becher's international renown and especially his impressive credential at some of the most powerful courts in Europe. Stahl's self-professed allegiance to Becher was successful to the extent that his close students and historical literature often recognize a chymical lineage of Becher and Stahl.

It has been pointed out that Stahl later came to disown his belief in chrysopoeia, and in the 1720s openly criticized Becher's alchemical teachings.³⁸ To reconstruct Stahl's conversion from an alchemy believer to its open critic, a study of the *Philosophical Principles* and its alchemical appendix is then imperative. The publication of this text in 1720 in fact necessitated his open criticism of chrysopoeia, and especially of Becher. We know virtually nothing about what motivated Stahl's conversion. Yet once converted, Stahl found the publication of his early alchemical teaching embarrassingly revealed his youthful "credulity" in the "foolish transcendental hope or imagination of gold-making."³⁹ Instead of explicitly condemning himself for that, he chose to cleanse his past by repudiating Becher's chrysopoetical doctrines on every occasion available. Thus in 1723 he wrote a long criticism of Becher's *Natur-Kündigung der Metallen*, and when he was invited to write a preface to Becher's *Chymischer Glücks-hafen* upon its republication, he again seized the opportunity to lash out chrysopoeia. He remains indebted, he says, to Becher's general matter theory. What he did not say was that whatever wrong with his youthful belief in chrysopoeia was to be blamed on Becher. Stahl himself would remain undisputedly the righteous master in the

chemico-medical world of the new age purged of "the great philosophical work."

Notes

¹ Georg Ernst Stahl, *Philosophical Principles of Universal Chemistry, or, The Foundation of a Scientifical Manner of Inquiring into and Preparing the Natural and Artificial Bodies ... Drawn from the Collegium Jenense of Dr. George Ernest Stahl*. By Peter Shaw M.D (London: Printed for John Osborn and Thomas Longman, 1730), hereafter *Philosophical Principles*. This common knowledge is not exactly true. A dissertation written by Stahl's student Johann Christian Fritsch and Stahl's foreword to it in fact also have an English translation, and are the second and third titles of the *Pyrotechnical Discourses: being I. An Experimental Confirmation of Chymical Philosophy, Treating of the Several Principles in the Animal, Vegetable, and Mineral Kingdoms. With a Perspective Against Chymical Nonentities ... II. A Short Discourse on the Original of Metallick Veins ... which May Serve as an Answer to Dr. Woodward's Theory of the Earth, and Was a Forerunner to III. The Grounds of Pyrotechnical Metallurgy and Metallick Essaying* (London: Printed, and sold by B. Bragg, 1705).

² Stahl's *Philosophical Principles* and its Latin and German editions have been touched upon by the major histories of chemistry, such as Thomas Thomson, *The History of Chemistry*, 2 vols. (London: Henry Colburn and Richard Bentley, 1830), 1: 253-55; Theodor Gerding, *Geschichte der Chemie* (Leipzig: F.W. Grunow, 1867), 256-57; Hermann Kopp, *Die Alchemie in älterer und neuerer Zeit: Ein Beitrag zur Culturgeschichte*, 2 vols. (Heidelberg: Carl Winter, 1886), 1: 69-70; James R. Partington, *A History of Chemistry*, 4 vols. (London: Macmillan, 1961-70), 2: 664-65; Allen G. Debus, *The French Paracelsians: The Chemical Challenge to Medical and Scientific Tradition in Early Modern France* (Cambridge: Cambridge University Press, 1991), 195-97. Hélène Metzger, in her *Newton, Stahl, Boerhaave et la Doctrine Chimique* (Paris: Librairie Felix Alcan, 1930) relied on the French translation of Johann Juncker's digest of Stahl's chemical teachings, *Éléments de chymie: Suivant les principes de Becker & de Stahl* (Paris: Chez Siméon-Prospér Hardy, 1757), which drew on much of the Latin edition of the *Philosophical Principles*.

³ For a study of this history, see Ku-ming (Kevin) Chang, "Georg Ernst Stahl's Alchemical Publications: Anachronism, Reading Market, and a Scientific Lineage Redefined," in *New Narratives in Eighteenth-Century Chemistry*, ed. Lawrence M Principe (Dordrecht: Springer, 2007), 23-43.

⁴ Georg Ernst Stahl, *Chymia rationalis et experimentalis, oder Gründliche der Natur und Vernunft gemäße und mit Experimenten ..., nebst einem Anhang von denen mercuriis metallorum, mercurio animato, und lapide philosophorum* (Leipzig: C. J. Eyssel, 1720), hereafter *Chymia rationalis et experimentalis*.

⁵ The Latin edition is Stahl, *Fundamenta chymiae dogmaticae & experimentalis &*

quidem tum communioris physicae mechanicae pharmaceuticae ac medicae tum sublimioris sic dictae hermeticae atque alchymicae: olim in privatos auditorum usus posita, jam vero indultu auctoris publicae luci exposit: annexus est ad coronidis confirmationem tractatus Isaaci Hollandi de salibus & oleis metallorum (Sumptibus Wolfgangi Mauritiij Endteri hæred. typis Johannis Ernesti Adelbulneri, 1723).

⁶ "Supplement Containing an Historical and Experimental Inquiry into the Business of Mercurification, or the Mercuries of Metals, Animated Mercury, and the Great Philosophical Work" (hereafter "Supplement"), in Stahl, *Philosophical Principles*, 376-424. The title of the Latin edition of this supplement is "Coronis de mercurificatione seu mercurii metallorum & animates & magno philosophorum opera," that of the German edition is essentially a literal translation of the Latin title.

⁷ This refers to a dissertation that Rolfinck supervised (and likely wrote): Werner Rolfinck, *Non ens chymicum, mercurius metallorum et mineralium* (Ienae: Wertherus Jena., 1670), respondent Dieter Gephard Walburger. Becher argued against Rolfinck in his *Experimentum chymicum novum, quo artificialis & instantanea metallorum generatio & transmutatio ad oculum demonstratur. Loco supplementi in physicam suam subterraneam et responsi ad D. Rolfinckii schedas De non entitate mercurii corporum ...* (Francofurti: Sumptibus Joh. Davidis Zunneri, typis Henrici Friesii, 1671).

⁸ Stahl, "Supplement," *Philosophical Principles*, 376. Stahl cited Johann Kunckel, *Chymische Anmerkungen... mit Anhang einer chymischen Brille contra non-entia Chym. ...* (Wittenberg: In Verlegung Joh Wilhelm Fincelii seel. Erben, Druckts Christian Schrödter, 1677), Joel Langelott, *Epistola ad praecellentissimos naturae Curiosos. De quibusdam in Chymia praetermissis, quorum occasione Secreta haud exigui momenti proq[ue] non-Entibus hactenus habita, candide deteguntur & demonstrantur* (Hamburgi: Ex officina Gothpredi Schultzen), and Theodor Kerckring, *Commentarius in currum triumphalem antimonii Basilii Valentini, a se latinitate donatum* (Amstelodami: Sumptibus Andreae Frisii, 1671).

⁹ Stahl, "Supplement," *Philosophical Principles*, 376. Stahl's reference here is Andreas Cassius, *De extremo illo et perfectissimo naturae opificio ac principe terrae-norum sidere auro de admiranda ejus natura, generatione, affectionibus, effectis, atque ad operationes artis habitudine* (Hamburgi: Sumptibus Georgii Wolffii, 1685). It thus shows that this alchemical supplement cannot have been written before 1685.

¹⁰ *Ibid.*, 378-91.

¹¹ *Ibid.*, 391.

¹² *Ibid.*, 394-95.

¹³ Adam Gottlob Berlich, *Dissertatio inauguralis de medicina nniversali*, praeses: Rudolf Wilhelm Crause (Ienae: Literis Nisianis, 1679).

¹⁴ Stahl, "Supplement," *Philosophical Principles*, 397-98.

¹⁵ Stahl did not specify Digby's work. Grummet's work is *Das Blut der Natur* (Dreßden: in Verlegung des Autoris, 1677). No dates of Grummet were available. He was first assistant to Johann Kuncel (1630-1703) and turned to be a foe. Stahl noted his dispute with Kuncel on the validity of niter.

¹⁶ Stahl cited Philalethes' *Introitus apertus ad occlusum Regis Palatium*, and identified the author of *The Marrow of Alchemy*, which is usually attributed to Philalethes also, as a different person.

¹⁷ *Ibid.*, 406-07.

¹⁸ *Ibid.*, 401.

¹⁹ *Ibid.*, 319.

²⁰ *Ibid.*, 408.

²¹ *Ibid.*, 413.

²² *Ibid.*, 420.

²³ *Ibid.*, 413-14.

²⁴ *Ibid.*, 408-13. The philosophical sulphur was referred to as golden sulphur or fix'd sulphur in this discussion.

²⁵ *Ibid.*, 413

²⁶ Stahl, *Chymia rationalis et experimentalis*, 516.

²⁷ *Ibid.*, 518-20.

²⁸ Stahl, "Supplement," *Philosophical Principles*, 403; the bracketed Latin originals in *Fundamenta chymiae dogmaticae & experimentalis*, 223.

²⁹ "[A]n Atom is one numerical individual (*numero individuum*); but an Aggregate several Atoms combined together by contiguity." Stahl, *Philosophical Principles*, 11.

³⁰ *Ibid.*, 14.

³¹ *Ibid.*, 14. Stahl calls the first-order combination *mixtum* and the second-order *compositum*. Shaw translated them as *mixt* and *compound*.

³² Stahl is not certain about the composition of common sulphur in this work, thus not precise. He postulates that common sulphur consists of a saline, earthy substance and a "grosser mineral matter." *Ibid.*, 159.

³³ *Ibid.*, 324-27.

³⁴ *Ibid.*, 207-9.

³⁵ *Ibid.*, 225-26.

³⁶ *Ibid.*, 319-21. On the dry method, 321.

³⁷ Ku-ming Chang, "The Matter of Life: Georg Ernst Stahl and the Reconceptualizations of Matter, Body and Life in Early Modern Europe" (Ph.D. Thesis, University of Chicago, 2002), 32-39.

³⁸ Chang, "Georg Ernst Stahl's Alchemical Publications."

³⁹ Johann Juncker, *Conspectus chemiae theoretico-practicae* ..., 2 vols. (Halae Magd.: Impensis Orphanotropei, 1730), 2: sigs. a4v-b1r.

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CONTRIBUTORS

Dóra Bobory. Dóra Bobory holds a Ph.D. in history from the Central European University in Budapest. Her research focuses on patron-practitioners and 'intellectual vagabonds' within the framework of the history of alchemy, astrology and the divinatory arts in early modern Europe. Her first monograph 'The Sword and the Crucible. Count Boldizsár Batthyány and Natural Philosophy in Sixteenth-Century Hungary' was published in 2009 by CSP. She is the creator of the international project 'On the Fringes of Alchemy' which held its first workshop in July 2010 in Budapest.

Antoine Calvet. Antoine Calvet is Doctor at Université de Paris-Sorbonne (1995). His work and his thesis focused on the medieval Occitan language and, in particular, editing, analysis and translation of an alchemical text, the Rosari (Occitan version of Rosarius Philosophorum), attributed to the famous doctor Arnau de Vilanova. Thereafter, he continued in this way, the study of the alchemical corpus of pseudo-Arnau de Vilanova.

Ku-ming (Kevin) Chang received his Ph.D. in the history of science at the University of Chicago and is Associate Professor at the Institute of History and Philology at Academia Sinica, Taipei, Taiwan. He studies Georg Ernst Stahl's chymical and medical thought, and the history of the doctoral dissertation as a genre of academic writing and publication.

William Eamon is Regents Professor of History and Dean of the Honors College at New Mexico State University. His research focuses on the history of science and medicine in Renaissance Italy and Spain, and on science and popular culture in early modern Europe. He is the author *Science and the Secrets of Nature: Books of Secrets in Medieval and Early Modern Europe* (Princeton, 1994); *The Professor of Secrets: Mystery, Medicine, and Alchemy in Renaissance Italy* (Washington, 2010); and over 50 articles and book chapters on various aspects of early modern science and medicine. He is also the coeditor (with Victor Navarro Bròtons) of *Más allá de la Leyenda Negra: España y la Revolución Científica* (Valencia, 2007). He is currently at work on two book projects: *Science*

and Everyday Life in Early Modern Europe, 1500-1750 (Cambridge), and *Discovery and the Origins of Science*.

Benjamin Fauré graduated in Medieval History at the University of Toulouse-II-Le-Mirail in 2006. The subject of his thesis was “Toward a history of medieval alchemy in the West, from the Scholastic philosophy to temporal power, with a critical edition of the *Disputatio* ascribed to Michel Scot”. His main interests include the links between alchemists and princes, and alchemy and counterfeiting in the late medieval West through official documents of the royal courts and justice, chronicles and alchemical treatises.

Gabriele Ferrario completed his PhD at the University of Venice “Ca’ Foscary” in 2007, with a thesis on the Arabic and Hebrew *Liber de aluminibus et salibus*. He has been a fellow at the Warburg Institute (London; 2007) and at the Chemical Heritage Foundation (Philadelphia; 2008) and has worked for the Schoenberg Database of Medieval Manuscripts and for the World Digital Library project (Library of Congress – Washington). He is currently a Research Associate at the Taylor-Schechter Genizah Research Unit (Cambridge), where he works mainly on the description of Judaeo-Arabic and Hebrew fragments of manuscripts.

Rémi Franckowiak is Associate Professor in History of Sciences and Epistemology at the University of Lille 1 (France). His research focuses mainly on issues in philosophy and history of chemistry from the 16th to the 18th century. He works on its relation with mechanism and physics, on the development of the Salt theories, on chemistry in the Académie Royale des Sciences and on its inclusion in dictionaries and encyclopedias, on the reception of French chemistry in England, and on alchemical issues.

Annelies van Gijzen studied Dutch language and literature at Universiteit Utrecht. Since 1979 she has worked on several research projects, from 1998 mainly at Universiteit Antwerpen and Universiteit Gent. Her research interests include medieval and early modern cosmology, astrology, medicine and alchemy in theoretical and fictional texts, interference between texts in Latin and the vernaculars, and the position of the Low Countries in the reception, production and transmission of texts about these themes.

Hiro Hirai is a Marie Curie Fellow at Radboud University Nijmegen (Netherlands) and the author of *Le concept de semence dans les théories de la matière à la Renaissance* (Turnhout: Brepols, 2005). His main areas of interest are Renaissance medicine, chymistry and natural philosophy. His second book, *Medical Humanism and Natural Philosophy: Renaissance Debates on Matter, Life and the Soul*, is forthcoming from Brill (Leiden) in 2011.

Didier Kahn is a researcher at the CNRS, in the «Centre d'étude de la langue et de la littérature françaises des XVI^e et XVII^e siècles» (CELLF 17e-18e). He is the author of *Alchimie et paracelsisme en France à la fin de la Renaissance (1567-1625)* (Geneva, Droz, 2007), and his next book is an annotated edition of Montfaucon de Villar's *Le Comte de Gabalis* (1670), to be published by Champion (Paris) by December 2010. He is currently preparing a book on early modern French alchemical circles and patronage, and another on the cultural context of alchemical debates in early modern France.

Bruce T. Moran. Professor Moran joined the faculty of the University of Nevada in 1976. His primary areas of study are the history of science, early medicine, and European cultural and intellectual history. In addition to numerous articles, he is the author of *The Alchemical World of German Court* (1991); *Chemical Pharmacy Enters the University: Johannes Hartmann and the Didactic Care of Chymiatry* (1991); (ed.), *Patronage and Institutions: Science, Technology and Medicine at the European Court* (1991); (trans. and commentary), *The Herbarius of Paracelsus* (1993); (co-ed.), *Disease and Medical Care in the Mountain West: Essays on Region, History and Practice* (1998); *Distilling Knowledge: Alchemy, Chemistry, and the Scientific Revolution* (2005); and *Andreas Libavius and the Transformation of Alchemy: Separating Chemical Cultures with Polemical Fire* (2007).

Sébastien Moureau has studied classical and oriental philology at the University of Louvain. His PhD thesis (2010) consists of the critical edition, translation and commentary of Pseudo-Avicenna's *De anima in arte alchemiae*. His main field of research is the transmission of knowledge, especially alchemy, from the Muslim world to Latin Europe during the Middle Ages. He is currently aspirant of the F.R.S – FNRS at the University of Louvain.

Miguel López Pérez completed his PhD at the University Complutense of Madrid in 1999, with a thesis on alchemy in early modern Spain, *Alquimia, terapéutica y sanidad en la España de los Austrias Menores*. He is independent researcher from 2005 and President of the Spanish Society for the History of Alchemy from 2008. He has published more than forty books, articles and book chapters on Spanish history of alchemy. He is currently preparing two books: *Money for Nothing. The history of a classical alchemical fraud. From Middle ages to today*, and *History of portable gold*.

Luc Peterschmitt. Luc Peterschmitt holds a PH.D. in Philosophy and History of Sciences, and is a member of UMR “Savoirs, Textes et Langage” (CNRS/Université Lille 3). His current work focuses on Berkeley and the relations between chemistry and mechanism in the seventeenth and eighteenth centuries. His recent publications include “Bacon et la chimie: le programme baconien des chimistes de la Royal Society”, *Methodos*, 8, 2008; “Boyle et les expériences contingentes », in *La philosophie naturelle de Boyle*, (Paris: Vrin, 2009) ; *Berkeley et la chimie. Une philosophie pour la chimie au XVIIIe siècle* (Paris : Classiques Garnier, forthcoming).

Rafal T. Prinke holds an MA in English Studies (1977) and a PhD in History (2000), both from Adam Mickiewicz University in Poznań, Poland. He is an assistant professor at the Faculty of Tourism at Eugeniusz Piasecki University, where he teaches informatics and does research on the theory and history of tourism and sociology of travel. The other areas of research which he pursues largely as an independent scholar cover history of science, intellectual history and that of esoteric currents, with special interest in alchemy, as well as genealogy and heraldry. His publications include books, edited books, and numerous articles in all those fields. At present he works on a long-planned monograph of Michael Sendivogius (1566-1636), the Polish alchemist of European fame.

José Rodríguez-Guerrero is editor and director of the e-journal *Azogue* devoted to the History of Spanish Alchemy since 1999. He has written several articles and chapters of books spreading the Spanish Alchemy, highlighting his work on the first commercial net of an alchemical remedy, or his forthcoming work on the true author of many pseudo-arnaldian alchemical texts.

María Tausiet is currently working in the Spanish National Research Council (CSIC, Madrid). Her areas of interest are magic, science and religion in Early Modern Spain. She is the author of *Ponzoña en los ojos: brujería y superstición en Aragón en el siglo XVI* (Zaragoza, 2000; Madrid, 2004); *Los posesos de Tosos (1812-1814). Brujería y justicia popular en tiempos de revolución* (Zaragoza, 2002); *El diablo en la Edad moderna*, co-edited with James S. Amelang (Madrid, 2004); *Abracadabra Omnipotens. Magia urbana en Zaragoza en la Edad moderna* (Madrid, 2007); and *Accidentes del alma. Las emociones en la Edad moderna*, co-edited with James S. Amelang (Madrid, 2009). She is now involved in a research project on 'The True and the False in Early Modern Spain'.

María Luz López Terrada is Senior Researcher (*Investigadora científica*) at the Instituto de Historia de la Medicina y de la Ciencia López Piñero, of the Spanish National Research Council (CSIC). She has published more than hundred books, articles and book chapters on the history of science. Her research has three foci. The first is the social history of medicine in Early Modern Spain, particularly: hospitals, medical practice, medical pluralism and popular practices related to health and disease, and the representation of medicine in the Golden Age drama. The second is the natural history of the same period, especially the introduction of American plants into Europe. Lastly, she is she is director of the Database *Historical Bibliography of Science and Technology in Spain* (<http://www.ihmc.uv-csic.es/buscador.php>)

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